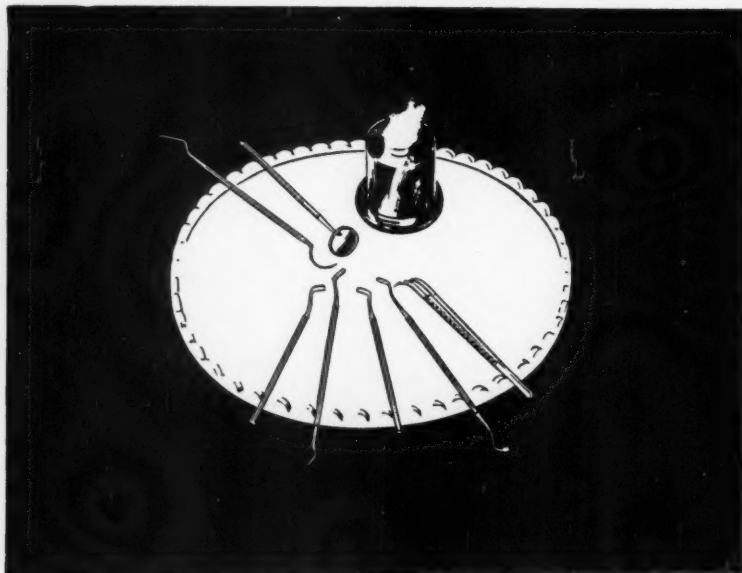


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VOLUME 22
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DECEMBER 1968



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Vol. 22

December, 1950

No. 12

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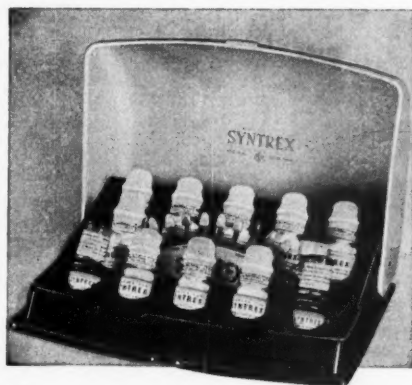
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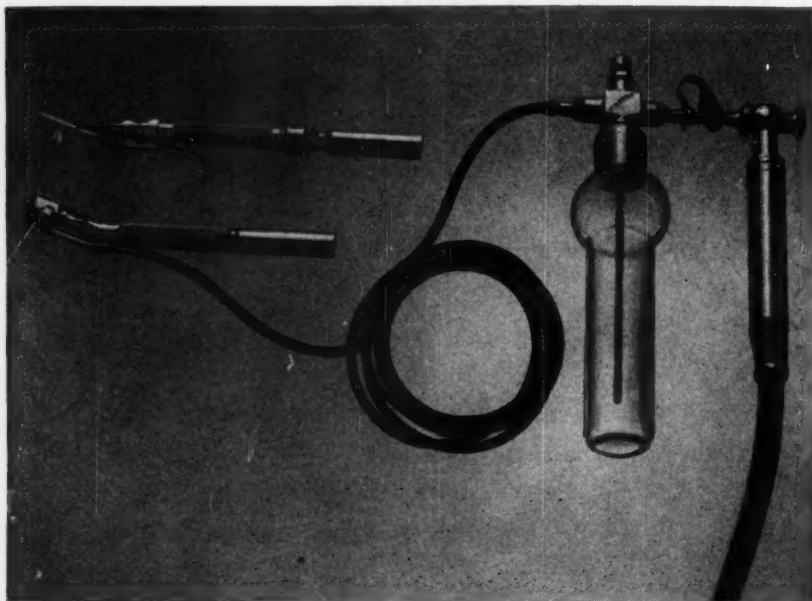
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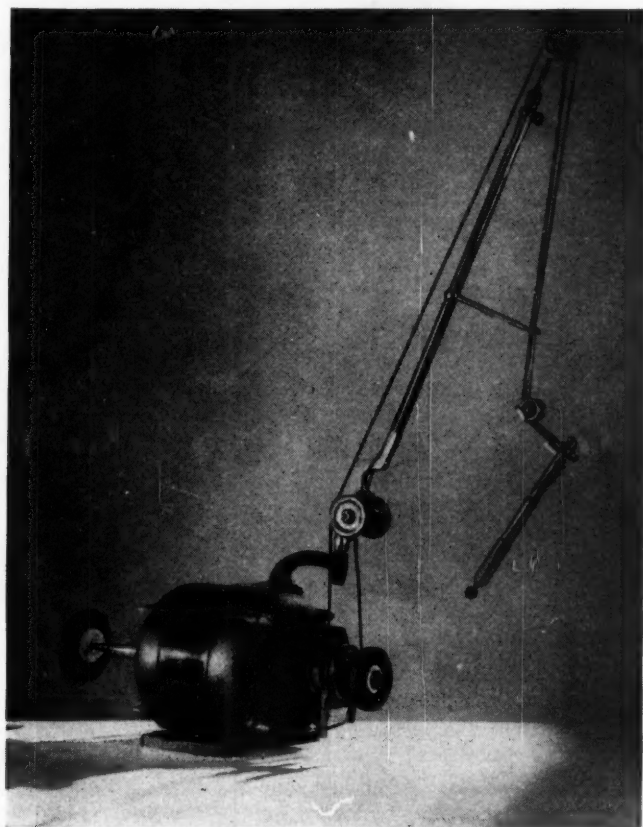
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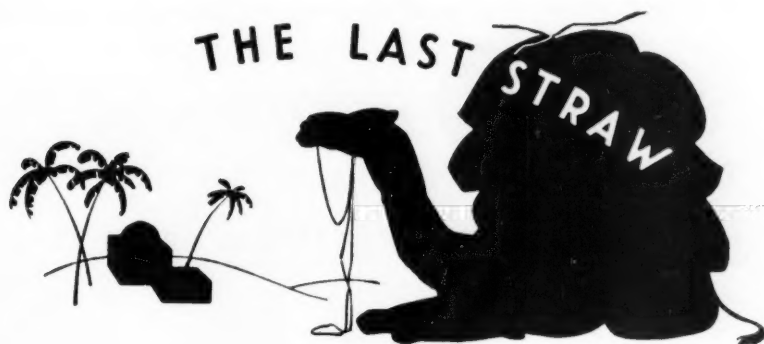
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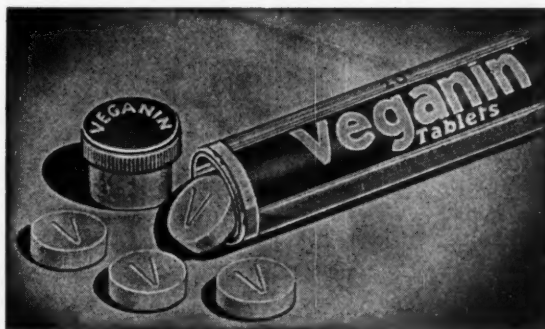
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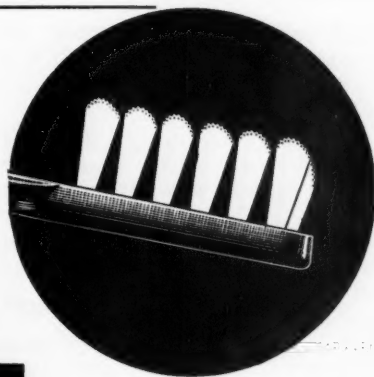


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PSYCHIATRIC IMPLICATIONS IN DENTISTRY*

A. T. EDWARDS, M.B., D.P.

The growth of specialisation in the medical profession, whilst essential in view of the rapid extension of our knowledge and the limited capacity of our individual brains, has tended to restrict more and more the field of interest of the individual specialist. To the ophthalmologist man is a pair of eyes with a body attached; the orthopaedist views him as a beautiful mechanism of muscle, bone and joint, unfortunately encumbered by his brain, abdominal contents and other soft tissue—is there a danger that to the dentist he becomes a pillared cavern in which the proprietor has no legal vested interest? The fact that you have arranged a series of papers of what may be termed para-dental interest answers this question in the negative.

The relationship of psychiatry and dentistry is threefold:—

- (1) Dental defects as a psychosomatic disorder.
- (2) The effect of dental defects and active dental interference upon the patient; and
- (3) The effect of the patient upon the dentist.

(1) The role of personality and emotion in the causation of dental lesions has not yet been fully explored, and most of the work done as yet is more suggestive than conclusive. The child and adolescent probably best display these psychosomatic effects; for instance, continuous and excessive nail-biting or pencil-biting, which produces deviation of the teeth and unusual wearing of one side of a tooth, frequently arise as the result of emotional disturbance in the child, and are often accompanied by other manifestations of anxiety and insecurity—nocturnal bedwetting, night terrors, temper tantrums, excessive shyness. Tension arising from anxiety or unexpressed aggression is responsible for grinding of the teeth in childhood and adolescents, and during sleep in adults, and at all ages may cause excessive pressure and therefore undue wear. Any attempt to cure the local condition only is unlikely to succeed if the mechanism that caused it continues to be active, and the psychiatrist and dentist here may be of assistance as a team. I would suggest that, wherever there is evidence of dental wear as the result of muscular action, inquiry be made as to the presence of other symptoms suggestive of maladjustment.

*From a lecture delivered at a meeting of the Australian Dental Association, New South Wales Branch, on July 25, 1950.

This is often accentuated by the impersonal relationships which exist so often in the dental surgery. I doubt if any body of women are more coldly impersonal than dental nurses. A friend recently told me that in his experience the attitude of the dental nurse reminded him of a story from America which relates how a woman from the Mid-west went to New York for investigation of indigestion. On her return home she complained bitterly how one had syphoned off fluid from her stomach, another had X-rayed her, another had peered down a tube into her stomach, a fourth had taken blood from her arm and a fifth had tested her urine—but no one had looked at her or treated her as a woman. A realisation by the dental nurse that her patients are not as hard and insensitive as the only parts of their body in which she appears interested would greatly improve the human aspect of the relationship. This individual interest and attention becomes of special importance when treating the large percentage of patients who are regarded as nervous or highly-strung—that is, those whose emotional reactions are exaggerated. These are patients who, for various reasons, generally suffer from basic feelings of insecurity and consequent anxiety, and every situation of stress, of unpleasant anticipation, increases this feeling of insecurity and so leads to some emotional manifestation. In these cases a little time spent by the nurse and/or the dentist will very profitably enable her to put her fears into words, to give some expression to her emotions, and by expressing and verbalising them, to put some bounds to them and so separate them into entities of relatively small magnitude, rather than as part of the total insecurity that she fears. Not infrequently have I heard from female patients complaints of their palpitations and fears and gastric "butterflies" when left for what to them appears to be at least half an hour waiting for the anaesthetic to "take," and with nothing to do but to gaze with increasing dread at the dental machine and its attendant threatening array of drills, standing like a Frankenstein in horrible isolation with the patient. A little understanding on the part of the dental nurse, with some pleasant conversation or the provision of a light magazine to distract the patient from her painful anticipations, would lessen these feelings of tension and therefore lessen the feelings of faintness and actual syncope which I am informed are not uncommon after completion of the operation. There is no doubt that with the efficiency of modern dentistry and of its analgesics and anaesthetics the emotional stress of anticipation of pain is very much greater than the stress arising from any actual pain.

This anticipation could be lessened in some degree if the dentist took his patient more into his confidence. In the past it has rather been the custom of physicians, surgeons and dentists to shroud their work in mystery and even now many medical men consider it an impertinence for even their more intelligent patients to question the reason and intention of their activities. (The psychiatrist perforce is more humble, for his work is continually being questioned by all and sundry.) After preliminary examination of the mouth, an appraisal of the total situation, with a forecast of the various measures to be taken, and the probable duration of treatment, and a brief explanation of possible causes would assist in making the patient feel more of an active participant in the treatment, rather than the faintly resentful victim of inexplicable aggression, that so frequently represents the patient's reaction.

In order to enhance somewhat this feeling of active participation, it would be helpful to stimulate the patient to ask questions concerning the con-

dition—and to avoid the frustration that ensues when the discussion is left until the patient has his mouth propped open with pledgets of cotton wool, unable to make any intelligible contribution to the discussion.

The attitude of dentist and nurse, of course, is more important in certain types of patients than in others.

Children must represent a problem to all dentists. Apart from their natural fear of unknown procedures, they have often been regaled by their fellows by dire tales of their own sufferings, or only too often has "the dentist will have to pull all your teeth out" been a constant threat by the mother in her endeavours to teach dental hygiene to the child. They have been haled to the surgery often under threats of punishment and are in a mood to try the patience of all concerned. Yet here above all is inexhaustible patience necessary, and time lost in gaining the youngster's confidence is time well spent. So far as possible it is advisable to exclude the parent from the surgery; the presence of a doting over-anxious mother or an impatient, threatening father are fatal to any successful rapport between dentist and patient. Alone with the child it is generally possible to treat him at a much more mature level than in the presence of the parent and every effort should be made to induce his co-operation before proceeding to any active procedures. At the first visit, a minimum of painful procedures should be carried out. It is always a mistake to mislead children and it takes a long time to regain the confidence that is lost when the child finds that "this will not hurt" is immediately followed by the burning pain of a hypodermic needle forcing its way into a sensitive gum. Children generally are realists and tend to interpret literally and absolutely what is said to them; they therefore regard the statement that a thing will not hurt as meaning an absolute freedom from pain, and not in the relative sense used by the dentist who in his mind is comparing the slight pain of the injection with the much greater pain arising from the extraction of the unanaesthetised tooth.

Parents being what they are, little is likely to be gained by piling Pelion on Ossa and adding one's own anger to the emotional reactions of the parent. Much more satisfactory results are likely to be gained by rewards than by threats or punishment. Children's hairdressers have learned this, and a child who suffers their ministrations without undue protest is rewarded by a ride on a rocking horse, or an attractive sweet. In this company, of course, I hesitate to suggest that sweets should be considered a suitable reward.

Patients suffering from major or minor mental disorders frequently cause doubt in the mind of the dentist as to whether fillings or extractions are wise whilst so-called nervous or mental symptoms are in evidence. It is very rare indeed for these disorders to contra-indicate dental attention. Certainly they may cause somewhat excessive reactions at the time, but these are generally

temporary, and they are far outweighed by the advantages gained when a carious tooth or some other form of dental sepsis is removed. Though the pendulum has swung a way from the focal sepsis so stressed by Cotton a couple of decades ago as the primary cause of mental disorder, there was yet sufficient truth in his claims to make it essential that all forms of sepsis be eliminated.

As a general rule (though naturally there are exceptions) psychotic patients need little special attention. The neurotic, however, frequently needs to have his environment adapted to his limitations in many ways, and it is necessary in each case, for instance, to decide whether it is advisable to do as much as possible at each sitting and so spare the patient as much anticipation as possible; or to do a minimum at each visit, and so reduce the stress to the patient's capacity for adaptation. In many neurotics it is preferable to administer a sedative beforehand rather than an analgesic afterwards, and I would suggest a compound such as nembudeine which combines the analgesic properties of codein with the sedative properties of nembital (a barbiturate). It is often helpful to remember also that in these patients their nervous symptoms are frequently associated with and in part the result of hyperventilation, and pseudo-syncopal attacks or "dizzy spells" can often be prevented by instructing the patient to take small breaths and to prolong the period between expiration and inspiration.

In this type of patient, any anxiety on the part of the dentist, any evidence that he is not sure of himself and has not complete confidence in his own actions will produce an increase in the patient's own anxiety. One must, of course, be aware of one's own limitations, and must frequently be somewhat unsure of the correct decision to make, but in the presence of a neurotic patient, no evidence of this indecision can be allowed to appear. They react badly to any attempt to hurry procedures along, they are frequently inordinately though unconsciously egotistical, and are avid of attention, and one's procedures need to be governed by a recognition of the patient's needs.

Epileptics frequently provide a difficult problem. In these patients, of course, it is essential that all sources of physical or emotional irritation should be removed as soon as possible. Though I cannot quote from authority, I am sure from my own experience that epileptics are apt to respond with a fit within a few hours after a dental extraction. Whether this is a response to the anaesthetic, to the pain or to the emotional accompaniments of the operation cannot be decided, but I am inclined to believe that all three may be responsible. It is suggested that the doctor attending the epileptic be consulted before any tooth is extracted from an epileptic. My own preference is for the epileptic to be given an extra dose of his anticonvulsant and sedative, about an hour before the tooth is extracted; the extraction to be followed immediately by at least thirty minutes rest, and the remainder of the day to be spent

resting. This warning applies especially to those cases when adequate control has been established of fits that were previously frequent.

The psychotic patient is so rarely a problem in dental practice that it is necessary to mention only one type—that is the paranoid female patient who develops amorous delusions. Doctors and dentists become the object of these delusions more frequently than any other professional or business man, possibly on account of the more intimate individual relationships that are inescapable from the professional situation. One does not need to regard oneself as a Frankie Sinatra to recognise that one is likely to become the object of such a delusional system, and it is wise always to remember the possibility whenever any female patient returns over-frequently, or with insufficient cause, or makes a habit of returning for some mislaid article; and it is prudence rather than vanity that makes us ever on the alert for any phrase that may indicate the necessity for ensuring that one's nurse is always present at all times during that patient's visits.

(3) Finally, we may consider the effect of the patient upon the dentist. In America today much of the time given to psychiatric teaching is taken up with an examination, not of the patient's symptoms, but of the reaction of the student or the doctor to the patient. This is painstakingly dealt with, and the student is helped to understand that his own emotional problems are apt to prevent him taking a purely objective view of his patient. None of us ever achieve a completely objective attitude—and I doubt if it would be desirable to do so; but a little self-knowledge is often helpful, and it may be very salutary after the departure of a patient to review in detail one's reactions and ask oneself the real motive for each detail of one's behaviour. Knowledge thus gained may be of definite assistance towards improving one's professional relationships.

TOPICAL TREATMENTS OF THE TEETH AS A MEANS OF PREVENTING DENTAL DECAY*

BASIL G. BIBBY, PH.D., D.M.D.

Eastman Dental Dispensary, Rochester, New York.

Before entering into a consideration of the effectiveness of various agents which are supposed to reduce the activity of dental decay, it is wise to emphasize the fact that we do not have a clear concept of the intimate processes which contribute to its causation.

Even in the most fundamental aspect, the histopathological changes which occur in caries, there are few completely acceptable facts. I know that many will question that statement but before we reject it let us examine Miller's or Black's or other classical histological pictures which are supposed to show early caries in fissures. The timelessly reproduced illustrations of dark-coloured decay extending down through a fissure and spreading at the dentino-enamel junction seem quite convincing unless one looks at the cusps of the teeth in which the decay is supposed to be starting. If that is done it can be seen that in most instances the cusps are worn almost flat, and it is obvious from the amount of cuspal wear that these were teeth extracted from old patients. Obviously such pictures do not show decay beginning shortly after eruption as it does in children's teeth. What is illustrated is decay which has long since ceased to progress. In other words, a state of balance became established which prevented further destruction of the teeth. This concept of a state of balance between the progress of dental decay and its arrest is of fundamental importance, as it is in the consideration of all disease processes, or of life itself. It was Bordet, the famous French immunologist, who said, "Life is the maintenance of an equilibrium which is constantly menaced." In other words, any number of small factors may upset the equilibrium which determines whether disease will progress or not. There might be slight variations in the solubility of the inorganic components of the enamel, variations of the sort we¹ pointed out in the nature of the enamel protein, or any number of such factors. If we realize that the balance between the initiation or continuation of tooth destruction and its cessation is a delicate one and, therefore, that a variety of factors may influence it, we are in a position to appreciate the possible direct or indirect effects which various chemicals may have when they are applied to the tooth surfaces. The possible effectiveness of topical treatments of the teeth in the prevention of dental decay can be considered most profitably if this concept is kept in mind.

TOPICAL FLUORIDE TREATMENTS.

First, let us consider the effects of various methods of topical fluoride applications in preventing dental decay. These methods consist not only of variations of what we might call the "official line" procedure recommended by the U.S. Public Health Service, blessed by the American Dental Association and advocated by many State Departments of Health, but also of the attempts to reduce decay by other techniques of topical application or by the use of

*Presented at the Twelfth Australian Dental Congress, Sydney, August, 1950.

1. Bibby, B. G.—J.Dent.Res., 12:99, 1932.

fluorides in prophylactic cleaning mixtures, in mouthwashes, in dentifrices, and so forth.

Before comparing the results of such studies one point must be made. It is that, in the hands of all investigators who have made three or more topical applications of any concentration of fluoride solutions to clean dry teeth surfaces of children's teeth, approximately a 40% reduction of dental decay has resulted. That has been proven and reproven. I question whether there is any public health procedure which stands on a more solid statistical basis. Therefore, the fact that certain types of fluoride applications reduce dental decay does not need to be laboured. There is, however, a point which does have to be laboured. It is that as used at the present time such applications reduce the amount of new dental decay by less than half. To allow patients to expect more is doing a disservice not only to them but also to dentistry.

The results of the various topical fluoride studies have been summarized by Knutson² and McCauley³ and only selected reports will be referred to at this time. Table I presents some findings which draw attention to several points. In the first fluoride study Bibby⁴ showed a 46% reduction of dental decay resulting from only three treatments spaced at four-monthly intervals. Each single treatment was preceded by a prophylaxis. Alcohol and air was used to dehydrate the teeth prior to applying a 0.1% sodium fluoride solution. Although these results were obtained on a small study group, those who are more impressed than I am with statistical analyses of dental caries figures tell me that the findings are statistically valid. It is interesting to note that there is a slightly greater reduction in dental decay than was found in the studies carried out subsequently by other investigators⁵. In the third series of tests, Knutson *et al.*⁶ include some tests in which no prophylaxes were given preceding the fluoride applications. It can be noted that when the tooth surfaces were not cleaned the caries-preventing effect of the fluoride was much reduced. Four treatments gave only a 20% reduction instead of the usual 40%. This indicates that the absence of foreign material from the tooth surface contributes something to the effectiveness of the fluorides, and seems to justify the suggestion, for which more evidence will be offered later, that the greater care taken to prepare the tooth surfaces, the better the results may be. That the greater care in dehydration of the surface before the application of the fluoride solution may be a large part of the story is suggested by two other studies. One of these, Cheyne⁷, reports the only use of a rubber dam before making fluoride applications. Although the study was too small to have significance, it is interesting that two applications of an 0.05% fluoride solution gave about a 50% reduction of caries. The other study, Klinkenberg and Bibby⁸, showed more than a 50% reduction in new carious surfaces as the result of four single fluoride treatments spaced at three-monthly intervals. In this instance it seems possible that the less rapid caries-preventing effect which Galagan and Knutson⁹ observed, using spaced treatments, was more than off-

2. Knutson, J. W.—J.A.D.A., 38:204, 1949.

3. McCauley, H. B.—J.A.D.A., 38:430, 1949.

4. Bibby, B. G.—Tuft's Dental Outlook, 15:4, 1942.

5. Knutson, J. W. & Armstrong, W. O.—Pub.Health Rep., 58:1701, 1943.

6. Knutson, *et al.*—Pub.Health Rep., 62:425, 1947.

7. Cheyne, V. D.—J.A.D.A., 29:814, 1942.

8. Klinkenberg, E. & Bibby, B. G.—J.Dent.Res., 29:4, 1950.

9. Galagan, D. J. & Knutson, J. W.—Pub.Health Rep., 63:1215, 1948.

set by some differences in the treatment procedure. It is suggested that this advantage may rest in the fact that the dehydration (alcohol and air) or application procedures used were more careful than in the U.S. Public Health (Knutson) procedure. In other words we have a further indication that the cleaner and drier the teeth surfaces are, the better the effects of fluoride applications.

At this time it can appropriately be pointed out that the Knutson procedure of giving four treatments in a two-week period every three years was developed for use in public health programmes and not for use in private dental practice as was our procedure of treatments spaced four months apart, each given after a prophylaxis. The objectives of public health procedures, namely, the saving of time and labour and the placing of more importance on treatment of large numbers of people than the quality of the individual treatments, are not those of private dental practice. A programme of the sort we have advocated has the advantage that, regardless of variations in times of eruption of individual teeth, they will receive the benefit of a fluoride treatment shortly after they come into the mouth. It also offers an additional incentive for children to pay regular visits to the dentist. Such a procedure or a modification of it should, of course, be used in private practice.

An examination of the results of other methods of making fluoride applications to the teeth, such as by the use of prophylactic cleaning mixtures, mouthwashes, etc., (Table II) supports the hypothesis that the condition of the tooth surface influences the effects of fluoride applications. The table shows that the inclusion of fluorides in pumice and peroxide cleaning mixtures has uncertain effects in reducing dental decay¹⁰. Three tests¹¹ of fluoride-containing dentifrices produced no reduction of decay although a fourth¹² in which a dry powder was used seems to have had a beneficial effect. We also have unpublished data which shows about a 25% reduction in 150 children and no reduction in about 1,000 children. Except for a slight suggestion contained in Atkins¹³ very preliminary report, fluoride mouthwashes¹⁴ have not yet been shown to reduce dental decay. All of this work with cleaning mixtures, dentifrices, and mouthwashes points in one direction; namely, that uncertain results are obtained unless fluoride solutions are applied to clean, dry teeth surfaces. This is in line with the opinion offered earlier in this paper that the cleaner and drier the tooth surface the better are the results which can be expected from topical fluoride applications. It seems that successful fluoride therapy depends upon getting fluoride solutions in contact with clean, dry teeth surfaces and that providing this is done the concentration of the fluoride solution, the spacing of treatments or other variations influence results only in a minor way.

TOPICAL SILVER NITRATE AND ZINC CHLORIDE.

For the better part of a century silver nitrate has been advocated as an agent which will prevent dental decay, particularly the recurrence or continuance of decay in deep cavities. The idea that applications of silver nitrate would prevent the initiation of caries is of later origin. In recent years the

10. Bibby, B. G., *et al.*—*J.Dent.Res.*, 25:207, 1946.

11. Bibby, B. G.—*J.Dent.Res.*, 24:297, 1945.

12. McClendon, J.—*Abstr.: J.Dent.Res.*, 26:182, 1947.

13. Atkins, A. P.—*J.A.D.A.*, 31:353-7, 1944.

14. Roberts, *et al.*—*J.Dent.Res.*, 27:497, 1948.

TABLE I
EFFECTS OF DIFFERENT TOPICAL FLUORIDE PROCEDURES.

Study.	No. of Patients.	Age.	Solu. Used.	No. of Treatments.	Interval of Treatments.	Caries Reduction.
Bibby ⁴ (1942)	90	10-13	0.1%	3	4 months	46%
Knutson and Armstrong ⁵ (1944)	289	7-15	2%	8-16	within 2 weeks	40%
Knutson <i>et al</i> ⁶ (1947)	504	7-15	2%	4	within 3 weeks	20%
Cheyne ⁷ (1943)	46	4-6	0.05%	2	within 4 months	50%
Klinkenberg and Bibby ⁸ (1950)	139	25 av.	1%	4	3 months	56.6%

TABLE II

EFFECTS OF FLUORIDE CLEANING MIXTURES, DENTIFRICES, AND MOUTHWASHES.

Study.	No. of Patients.	Age.	Fluoride Used.	No. of Treatments.	Interval of Treatments.	Caries Reduction.
<i>Prophylaxes</i> Bibby <i>et al</i> ¹⁰ (1946)	47 95	6-15 6-15	1% NaF Paste "	3 2	4 months 6 months	43% 25%
<i>Dentifrices</i> Bibby ¹¹ (1945)	72	5-16	0.1% NaF Liq.	1 or more daily	less than 1 per day	0
McCleendon and Foster ¹² (1948)	46	18-23	0.1% NaF +	"	"	0
	48	18-23	F Apatite	"	"	0
	30	Medical Students	Powder	"	"	60%
	40	"	Rock Phosphate	"	"	66%
<i>Mouthwashes</i> Atkins ¹³ (1944)	20	Various	Water (4 ppm. F)	3 daily	—	Red. of Lacto-bacilli
Bibby <i>et al</i> ¹⁰ (1946)	31	18-23	0.1% (acid)	3 weekly		0
Roberts <i>et al</i> ¹⁴ (1948)	187	10-12	0.1% (acid)	2 weekly		—20%

work of J. Mark Prime drew much attention to the caries-preventing possibilities of silver nitrate. Prime did not make any quantitative clinical studies and published no figures to demonstrate the extent or even the reality of the caries reduction he claimed. However, Hoffman¹⁵ went over 56 of Dr. Prime's patients and examined 887 areas of incipient dental decay, each of which had received an average of six treatments with silver nitrate over a number of years. After analyzing the results he found that not one of these 887 areas of incipient dental decay had decayed after the silver nitrate treatment. This is a better result than has ever been obtained with fluoride treatments. It is probably significant to note that Prime insisted upon complete and thorough dehydration of the teeth surfaces as an essential part of the silver nitrate treatment. Over a three and one-half year period Klein and Knutson¹⁶ gave two or three ammoniated silver nitrate treatments to half of the first molars of 474 children. They apparently paid no particular attention to dehydration of the teeth and failed to show any reduction of dental decay in the treated molars.

While these findings demonstrate adequately that silver nitrate treatments of the sort given by the latter investigators do not prevent dental decay in six-year molars, they do not necessarily prove that different techniques of silver nitrate would not have been effective. This might be particularly true of teeth with a lower caries susceptibility than first molars, or to restate this the silver nitrate might have been effective in reducing dental decay in areas which were only slightly susceptible to dental decay, but that where there was a strong attack it could not swing the balance in favour of prevention. This suggests that the impregnation of caries-susceptible surfaces or incipient dental decay with any variety of chemical agents might upset the balance of the caries attack sufficiently to allow natural defensive processes to establish themselves. For instance, the caries resistance claimed by Gore as a result of impregnation of teeth with celloiden could be accounted for in this way. It is with a realization of these possibilities in mind that we can most profitably examine the claims of dramatic caries reduction made by the Gottlieb school following the use of a variety of agents, primarily silver nitrate and zinc chloride, to which names such as "septochem" and "impregmol" have been given (Table III).

In a series of six papers appearing in the *Texas Dental Journal* and the *Houston Dental Journal*, a consistent reduction of dental decay has been reported by a group of workers using a variety of topical treatments. Since 1942 this group has used "septochem" treatments (silver nitrate and a substance called "indigisol"), silver nitrate and calcium chloride, silver nitrate and sulfadiazine, silver nitrate and adrenalin hydrochloride and, finally, what is called "impregmol." "Impregmol" consists of zinc chloride and potassium ferrocyanide and sometimes these two agents are followed by silver nitrate. The details of the treatments differed from operator to operator and about

15. Hoffman, O. E.—Dental Caries, Chicago, A.D.A., 1941, p. 126.

16. Klein, H. & Knutson, J. W.—J.A.D.A., 29:1420, 1942.

17. Gottlieb, B. & Hinds, E. C.—Abstr.: J.Dent.Res., 21:317, 1942.

18. Younger, H. B.—Texas D.J., Dec., 1944.

19. Younger, H. B.—J.Dent.Child., 13:58, 1946.

20. Younger, H. B.—Texas D.J., Mar., 1949.

21. Crawford, H. M.—Texas D.J., Feb., 1949.

22. Summers, F. G., Gillard, H. F., Boesche, R. A.—Houston D.J., Mar., 1949.

TABLE III
EFFECT OF SILVER NITRATE AND ZINC CHLORIDE APPLICATIONS.

Author.	Agent Type.	Patients		Original Caries.	Treatments	Time.	New Caries.	% Redn.
		No.	Age.					
<i>Silver Nitrate</i>								
Hoffman (Prime) (1941)	Amm.	56	?	887 incip. caries	6 (av.)	Varied	None	100%
Klein and Knutson (1942)	Amm.	474 (1st molars)	4-12	554 sound	2 or 3	12 mo.	unchanged	0
Gottlieb Hinds ¹⁷ (1942)	Septochem	?	?	142 aftd. lactobac.	1	6 mo.	lactobac. negative	90%
Younger ¹⁸ (1944)	Septochem	25	5-12	positive	3 (?)	16 mo.	0.44	
	Control	5		12	0	"	4.2	
	Ag NO ₃	21	6-13	10.8	1	12 mo.	0.66	
Younger ¹⁹ (1946)	Control	4	8-13	12.0	0	"	5.0	
	Ag NO ₃	20		8+	1	12 mo.	0.2	
	Control	20		8+	0	"	1.95	
Younger ²⁰ (1949)	Ag NO ₃	83	all ages	10.6	1	12 mo.	0.6	80-90%
	Control	12	"	12	1	"	4.5	
	Ag NO ₃	63	8-13	8-	1	12 mo.	0.49	75%
	Control	62	"		0	"	1.9	
<i>Zinc Chloride</i>								
Crawford ²¹ (1949)	+ Pot. Fecyanide + Ag NO ₃	81	4-60	?	1	12 mo.	0.54	82%
	Control	81			0	"	3.0	
Gillard ²² (1949)	+ Pot. Fecyanide and/or Ag NO ₃	54	?	4.57*	1	12 mo.	0.72	84.5%
Boesche (1949)	"	90		6+*	1?	12 mo.	0.77	86.9%
Summers (1949)	"	50		7.08*	1	18 mo.	0.94	87.9%
Toller ²³ (1950)	+ Pot. Fecyanide Ag NO ₃	119	7-11		1 or more	6 mo.	16	84.8%
	Control	1373 teeth			none		165	0
Bushel ²⁴ (1950)	+ Pot. Fecyanide + Ag NO ₃	149	12-15		3	12 mo.	8.0	
		(Expt. Quadrants)		759	"	"	"	
		(Cont. Quadrants)		764				

*In previous year (or total).

the only thing that all techniques had in common was that all emphasized that the caries-susceptible areas had to be thoroughly cleaned and carefully dehydrated before treatments were given. Another point of similarity is that, in spite of the varied techniques and the use of at least six different chemical agents, all of the investigators obtained uniformly dramatic reductions of dental caries activity. Toller²³ in England has offered the only supporting evidence from outside of Texas. However, Bushel²⁴ in the only well-controlled study of Gottlieb's impregnation procedures failed to find any evidence of caries reduction in the treated sides of 149 children's teeth.

Because the evidence offered by the Texas group is somewhat unconvincing on account of ambiguities between total caries and new caries attack figures in their reports, and its lack of clear statements as to whether groups of patients received more than one type of treatment, it cannot be taken too seriously. Although some of their data is suggestive, particularly that obtained from comparisons of treated and untreated quadrants in the same mouths, one cannot in view of Bushel's excellent clinical study and some theoretical considerations believe that the impregnation procedures have any significant value in preventing caries.

Actually there is no real reason to believe that the impregnation of the teeth with zinc chloride and potassium ferrocyanide will close "invasion pathways" or reduce their susceptibility to proteolysis. All the authorities I have consulted seem to feel that such treatments would denature the tooth proteins and thereby would increase their liability to proteolysis: that is, they would make the enamel protein more susceptible to breakdown by proteolytic enzymes. Dr. Dannenberg and I²⁵ have tested this point in a preliminary way at the Eastman Dental Dispensary, using what are known as Mett tubes. In such capillary glass tubes in which protein is coagulated we found that the amount of protein dissolved out of the glass tubes after treatment with Gottlieb's "impregmol" was about 50% more than in untreated tubes. In other words treatment of protein with zinc chloride and potassium ferrocyanide actually increased proteolysis, as was theoretically predictable. Treatments of both calcified and decalcified dentin with zinc chloride and potassium ferrocyanide have also failed to show any reduction of proteolysis on treatment with pepsin. That silver nitrate would reduce proteolysis is most unlikely because one of the old methods used by bacteriologists for measuring the proteolytic activity of bacteria is to use a photographic film in which silver salts are contained in gelatin. If the organism under test is proteolytic the gelatin is dissolved and a clear space appears on the film. Because this is a very sensitive test, the silver obviously does not interfere with the proteolytic activity of bacteria. Sometimes Gottlieb implies that proteolysis is not important and that all he tries to achieve is a sealing off of "invasion pathways." What is being kept out of the tooth is never clearly specified. If it is proteolytic agents the criticism we have offered is valid. If it is a decalcifying factor then Gottlieb has added nothing new to ideas we^{1, 26} offered many years ago. Regardless of what is supposed to be kept out of the teeth, preliminary tests with a radio-active isotope of iodine have failed to demonstrate that the

23. Toller, J. R.—B.D.J., 58:172, 1950.

24. Bushel, A.—Reported at N.Y. State Dental Society, June 5, 1950.

25. Dannenberg, J. L. & Bibby, B. G.—J.Dent.Res., 29:177, 1950.

latest Gottlieb impregnating procedures do prevent the passage of chemicals through treated teeth.

Nevertheless, however wrong Gottlieb and his associates may be in their theories, it is still possible that some of their treatments might reduce the activity of dental decay. This might be the consequence not of a specific therapeutic effect but of the possibility that any of their six or more agents or even dehydration alone interfered temporarily with the caries attack and thus gave the natural defensive mechanisms of the tooth the chance to re-establish a condition of resistance. This might be brought about by a deposition of organic material in the area as we²⁶ formerly suggested, by a temporary change in the bacterial flora, or by a variety of unknown effects. Until we know more about such changes it is unwise to suggest that any of them is of predominant importance in producing any observed variation in caries activity.

DENTIFRICES.

The likelihood that faithful use of dentifrices might reduce dental caries has been made more real by Fosdick's²⁷ recent demonstration of about a 50% caries reduction in groups of students brushing their teeth regularly after meals with a neutral toothpaste. This finding, which still needs confirmation, at least offers a standard against which claims of the effectiveness of dentifrices containing special therapeutic agents can be measured.

Ammoniated Dentifrices. In recent years America has been flooded with advertisements claiming that ammoniated dentifrices will reduce dental decay. To date there is no acceptable scientific evidence to support these claims. Only one study²⁸ of the effect of ammoniated dentifrices on caries activity in human subjects has been reported. This study employed a high urea and a dibasic ammonia phosphate dentifrice (commercialised as Ammident Powder). Its effect on caries activity was determined by comparisons of dental office records of caries activity during periods of patients' use of ammoniated and non-ammoniated dentifrices. Whether such a study can ever produce satisfactory results is, of course, open to great doubt, but when it is noted that the published figures for the study for new caries in patients 30 and 40 years of age is the same as in children, and when it is noted that the amount of new caries, even in the ammoniated dentifrice users, is several times higher than those found in a much better study²⁹ of caries activity made in the same city, the doubts became grave suspicions. That the authors were, themselves, a little suspicious of their findings is indicated by their suggestion that the results they thought they saw might have been brought about by more careful oral hygiene and that the caries they observed was largely of the recurrent type which appears around the edges of fillings. If one discounts, as one must, the significance of this unconfirmed clinical study, then there is no reason (other than the advertising) for believing that such a high ammonium content dentifrice will reduce dental decay. It has not been shown to influence the ammonia content of the saliva, the pH of the saliva, the acid-producing capacity of saliva or of dental plaques, or even the lactobacillus count in human mouths; neither has any reduction of caries been demonstrated in

26. Bibby, B. G. & Van Huysen, G.—J.A.D.A., 20:828, 1933.

27. Fosdick, L.—J.A.D.A., 40:133, 1950.

28. Henschel, C. J. & Lieber, L.—J.Dent.Res., 28:248, 1949.

29. Hollander, F. & Dunning, J. M.—J.Dent.Res., 18:43, 1939.

animals. Indeed, whenever these factors have been investigated^{30, 31} they have been shown to be uninfluenced by the use of any type of ammonium dentifrice. In short, there is no accepted clinical or theoretical reason for believing that a dentifrice with a high ammonia content will reduce dental decay more than would faithful use of any other alkaline or perhaps neutral dentifrice.

The same criticism applies to ammoniated dentifrices of different compositions and a critical analysis of the basic studies which created their vogue can explain all of their suggestive findings on other grounds than on specific ammonium-ion effect.

Penicillin Dentifrice. The use of penicillin mixtures in the mouth is effective in reducing acid production in human saliva for a considerable period after use³². Penicillin in drinking water³³ or applied to the teeth³² also practically eliminates dental caries in rats and hamsters. A good clinical study³⁴ in children has revealed a reduction on new caries of more than 50% over a two-year period. If it were not for possible undesirable side effects, penicillin or other antibiotic dentifrices might have an important place in helping to control dental decay.

Fluoride Dentifrice. The evidence to date indicates questionable value in these agents. The development of less toxic fluoride compound in recent months suggests that effective fluoride dentifrices might yet be found.

SUMMARY.

In order to bring these diverse comments together I would like to offer the following general conclusions:—

It is probably possible to influence the rate of dental decay by means of making topical applications of a variety of chemicals. To date the only chemicals which seem to have been proven beyond reasonable doubt to be effective are the fluorides. Indications that better results are obtained when fluorides or silver nitrate are applied to a scrupulously clean and dry tooth surface suggests that attention to this point may improve the effectiveness of fluoride therapy. Ammonia dentifrices have been over-rated and probably have no special value. However, it is quite likely that an effective therapeutic dentifrice will be developed and become available for general use in the near future.

30. Bibby, B. G. & Nevin, T.—Unpublished data.

31. Glickman, I.—Personal communication.

32. Zander, H. & Bibby, B. G.—J.Dent.Res., 26:365, 1947.

33. McClure, F. J. & Hewitt, W. L.—J.Dent.Res., 25:441, 1946.

34. Zander, H.—Reported at International Assn. for Dental Research, French Lick, Ind., March 22, 1950.

DETERMINATION OF FACIAL TYPES AND DIAGNOSIS OF SAGITTAL MALOCCLUSION USING CEPHALOMETRIC X-RAY PHOTOGRAPHY*

ARNE BJORK, VASTERAS, SWEDEN.

The occurrence of malocclusions depends not merely upon changes of a local nature, which are confined to the dental arches or to the dental part of the jaws. It is evident that malocclusions may be regarded to a considerable extent as symptoms of more generally active factors which determine the formation of the facial skeleton and the skull as a whole.

Of the various methods that have been employed for studying the relation between the occlusion and the facial build, the use of X-ray cephalometry offers exceptionally valuable advantages, because of the possibility it gives of obtaining some idea of the internal structure of the skull. The various investigations carried out within this field by Broadbent, Brodie, Downs,

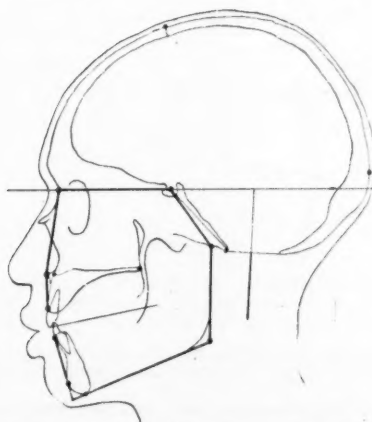


Fig. 1.—Facial diagram for measuring variations in the facial structure and the cranial base from a lateral X-ray exposure.

Heath, Thompson and others have served materially to alter our views on the subject of facial morphology, proportional growth changes, function of the jaws, etc. I shall here touch briefly upon some aspects of X-ray diagnosis of sagittal malocclusion, based on methods and results from my investigations into the relation between prognathism and occlusion of the teeth.

Lateral X-ray exposures of the head were taken in the course of an examination covering 603 Swedes, of whom 281 were male adults and 322 twelve-year-old boys. A statistical analysis of this material was published in 1947¹. The same X-ray method was also employed in an examination of 400 primitive Bantus, which I carried out in Southern Rhodesia in 1948².

*Presented at the Twelfth Australian Dental Congress, Sydney, August, 1950.

1. The Face in Profile. Berlings Boktryckeri, Lund, 1947.

2. Some Biological Aspects of Prognathism and Occlusion of the Teeth. Acta Odontologica Scandinavica, Vol. 10, 1950.

Prognathism is the characteristic which determines the general shape of the facial profile. By prognathism is meant "the prominence of the facial skeleton in relation to the brain-case according to the anthropological definition." Prognathism is therefore a biological conception which is not governed by any specific method of measurement.

In the studies referred to here the prognathism has been determined by measuring the angles from a cranial baseline through nasion and the centre of sella turcica to facial profile lines. (Figs. 1 and 2.)

A distinction has to be made between facial and alveolar prognathism. The term facial prognathism refers to the protrusion of the facial structure as a whole, whilst alveolar prognathism indicates a prominence of the alveolar arches beyond the jaw basal-bones. These two types of prognathism, facial

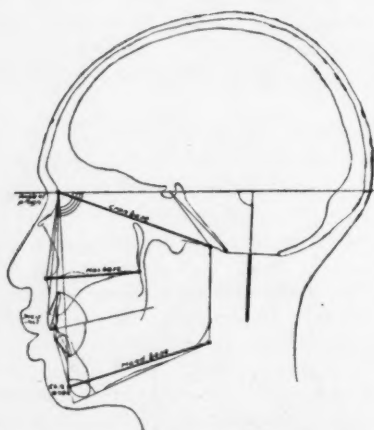


Fig. 2.—Diagram indicating the method of measuring the angles of prognathism and the inclination of the incisors from a lateral X-ray exposure.

and alveolar, are not always concurrent. In order to determine the prominence of the different parts of the facial profile, the prognathism has been measured to four points on the bone profile.

- (1) *Maxillary basal prognathism*: The angle formed by the cranial base and a profile line through nasion and the nasal spine.
- (2) *Maxillary alveolar prognathism*: The angle formed by the cranial base and a profile line through nasion and prosthion (upper alveolar margin).
- (3) *Mandibular alveolar prognathism*: The angle formed by the cranial base and a profile line through nasion and infradentale (lower alveolar margin).
- (4) *Mandibular basal prognathism*: The angle formed by the cranial base and a profile line through nasion and pogonion (the most prominent point on the chin).

In this way it is possible to distinguish between the prognathism of the two jaw basal-bones and the two alveolar arches which, as will be demonstrated later, is of great importance in orthodontic diagnosis. The inclination of the

incisors is expressed by the angle formed between the longitudinal axes of the upper and lower incisors to the occlusion plane. Here will also be mentioned the methods for determining the configuration of the cranial base from the X-ray film. The length of the cranial base has been defined in two different ways. Firstly, it is desirable to measure that part of the cranial base which is directly connected with the jaw structure, i.e., the distance between nasion and the temporo-mandibular articulation (articulare, the point of intersection of the posterior contours of the ramus with that of the cranial base). Another measurement which we require is the overall length of the cranial base, from nasion to basion, i.e., to the frontal ridge of foramen magnum. The latter point of measurement is discernible both on roentgenograms of living subjects and on crania, provided a suitable degree of hardness of the X-ray illumination is chosen and when a Lysholm grid is used.

The shape of the cranial base, i.e., its deflection, is given by the angle formed by the front and rear parts of the cranial base. This angle is measured

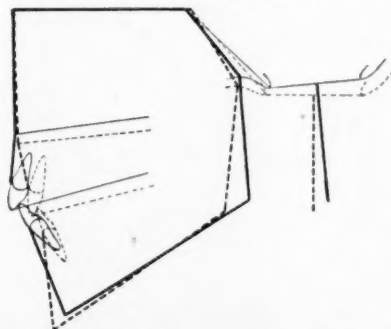


Fig. 3.—Diagram showing the mean difference in facial build and prognathism between adult male Bantus (full lines) and adult male Swedes (broken lines), illustrating the difference in alveolar prognathism.

partly between nasion-sella turcica-articulare and partly between nasion-sella turcica-basion. Having given this short orientation of the roentgenometric method employed, the normal variation in prognathism and its relation to the variation in sagittal occlusion of the teeth will be discussed.

ALVEOLAR PROGNATHISM.

Alveolar prognathism indicates a condition in which the alveolar arches protrude beyond the jaw-bases or the basal bone of the jaw structure. In the phylogenetic development in primates the prognathism diminishes due to a shortening of the jaws. This reduction in jaw-length affects the alveolar portions of the jaw more than the basal arches, and results in a straightening of the facial profile from the root of the nose to the chin. The profile becomes progressively straighter and the incisors of both jaws also become more upright. Owing to this phylogenetic reduction in alveolar prognathism the nasal part of the face and the chin assumes a more prominent aspect.

The degree of alveolar prognathism also varies widely with different racial groups, e.g., it is extremely pronounced in West African negroes and less marked in Europeans. The racial difference in alveolar prognathism may here be illustrated, as it manifests itself in Swedes and Bantus, by comparing facial diagrams constructed from mean values representing adult

males belonging to these two racial groups. (Fig. 3.) A comparison of the diagrams will show that the alveolar prognathism is more pronounced in the Bantus, which has the effect of making the incisors more protrudent and the chin more recessive.

The normal variation in alveolar prognathism and inclination of the incisors is considerable in both races, although smaller in the Bantus. Alveolar prognathism or bimaxillary protrusion accompanied by a marked forward inclination of the incisors is in many cases a normal occurrence also in Europeans, and does not in itself imply any need for orthodontic treatment unless it is accompanied by irregularities in the tooth position or in the occlusion.

During the growth period the alveolar prognathism diminishes, the profile becomes straighter and the incisors become more upright. The difference in inclination of the incisors of twelve-year-old Swedish boys and male adults is

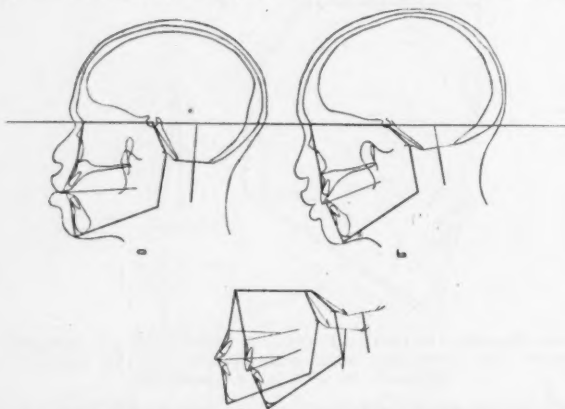


Fig. 4.—Diagram illustrating the difference in facial build in the case of (a) maximum and (b) minimum facial prognathism in adult male Bantus. A comparison of these diagrams is given in the lower figure.

9° as measured from the longitudinal axes of the maxillary incisors to those of the mandibular incisors. The same tendency of the incisors to become upright during growth is found in the Bantu material.

Our calculations will show that crowding is a distinct symptom of a general reduction in facial prognathism, due to a shortening of the jaws, and hence not merely a shortening of the alveolar arches. Crowding does not on an average appear to be connected with a marked tilting forward of the incisors, even though it may occur in some individual cases.

In certain cases of crowding, tooth extraction is warranted as a necessary measure in the orthodontic treatment in order to prevent over-expansion. This is in accordance with Tweed's method of treatment. Our investigations, on the other hand, do not indicate any need for, or indeed point to the desirability of, making it a general aim in orthodontic treatment to correct the incisors to a practically vertical position, as will be discussed later.

FACIAL PROGNATHISM.

The term "facial prognathism" refers to a prominence of the face in relation to the brain-case and not only to a protrusion of the alveolar arches. Regarding the nature of facial prognathism the author has concluded that prognathism may arise in four different ways:

- (1) Due to a shortening of the cranial base.
- (2) Due to an angular deflection of the cranial base.
- (3) Due to changes in the shape of the facial skeleton which cause the angle formed between the ramus and the cranial base to diminish.
- (4) Due to increased jaw-length.

These different causes of prognathism may combine in various ways, and the effect of one or more causes which are active simultaneously may be com-

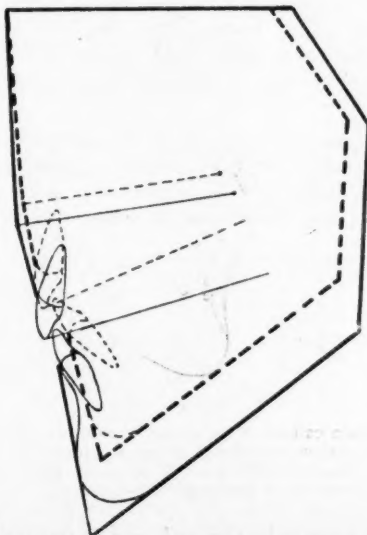


Fig. 5.—Diagram illustrating the mean difference in prognathism between Swedish twelve-year-old boys and adult men.

pensated by one or more of the other factors having a counteracting effect, i.e., they tend to cancel each other out.

Maxillary and mandibular prognathism are generally concurrent and this may be referred to as total prognathism. The occlusion may be normal, irrespective of the degree of prognathism. (Fig. 4.) The difference between maxillary and mandibular prognathism is dealt with in a later section on the variation in sagittal occlusion.

The varying degree of prognathism observed in individuals of the same racial group is thus not connected only with different lengths of the jaws. A statistical analysis has shown that a varying degree of facial prognathism depends mainly upon the configuration of the cranial base. This will be illustrated by comparing facial structures representing maximum and minimum facial prognathism in Bantus. (Fig. 4.) In the case of highly developed prognathism the entire facial skeleton protrudes, mostly due to a deflection of the

cranial base or to a shortening of its two parts. A forward inclination of ramus is often also a contributing factor. The difference in jaw size, on the other hand, influences the variation in facial prognathism only to a lesser degree.

In highly prognathic structures the ramus is, on an average, high and inclined forward, while the frontal height of the face, from the root of the nose to the chin, is small, causing the jaws to be more or less parallel with the cranial base.

A lesser degree of facial prognathism, on the other hand, is mostly accompanied by a short, rearward inclined ramus, combined with a large frontal facial height. In this way the jaws are given a marked rearward inclination. The inclination of the occlusal plane or the mandibular base plane is thus intimately correlated to the degree of facial prognathism, and depends upon the shape of the cranial base, the inclination of ramus and the proportion in height between ramus and the facial profile. The Frankfort-mandibular plane angle which has been used for purposes of diagnosis in

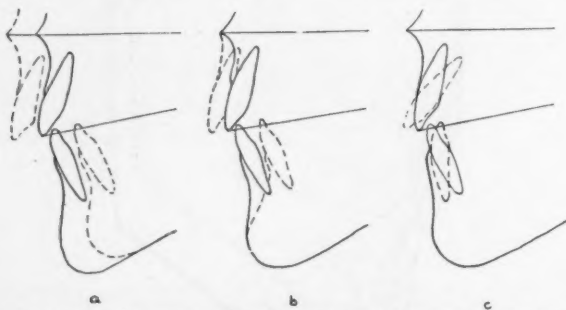


Fig. 6.—The three main causes of maxillary overjet shown by the broken lines.

- (a) A relative difference in basal prognathism.
- (b) A relative difference in alveolar prognathism.
- (c) Inclination of the incisors.

orthodontics is thus not dependent on any bite characteristic and will not provide any information relevant to the bite formation. The Frankfort-mandibular plane angle varies in the same way in other races, irrespective of whether malocclusion is a common occurrence or not.

During the growth period subsequent to the first years of life the facial prognathism increases somewhat due to continued growth of the jaws after the cranial base has attained its ultimate size. (Fig. 5.) As a result of this the mandibular prognathism will be slightly greater than the maxillary prognathism and this in turn leads to a slight change in occlusion. The effect of this is to reduce the maxillary overjet in children as they approach maturity. Individual variations naturally occur, and these may best be investigated by follow-up studies such as those carried out by Broadbent, Brodie, Sillman and others.

VARIATION IN SAGITTAL OCCLUSION.

After this short orientation of the normal variation in prognathism, the relationship between facial structure and occlusion of the teeth will be discussed.

A discrepancy in the relationship between the upper and lower jaw may be due to changes in the facial or cranial structure or to some local effect confined to the dental arches. Both factors may, of course, be responsible. However, local changes in the dental arches can only exercise a limited effect, whilst abnormal facial or cranial proportions may produce very marked changes. Statistical analysis of the relation between variations in sagittal occlusion and the facial build has shown that this relation becomes more evident by basing the analysis on the degree of overjet of the incisors than by employing the Angle classification.

The possible causes of maxillary overjet will be considered first.

(Fig. 6.) The three main causes of maxillary overjet are:—

- (i) A relative difference in basal prognathism. This is the case when the upper jaw as a whole is more prognathic than the lower. (Fig. 6a.)
- (ii) A relative difference in alveolar prognathism. This condition indicates that the upper arch protrudes in relation to the lower alveolar arch, but the jaws or jaw-bases are in normal relationship. This may be due either to an elongated upper or shortened lower dental arch. (Fig. 6b.)
- (iii) A change in the maxillary overjet may also occur, without any changes in the basal or alveolar prognathism, due to the inclination of the incisors, i.e., when the maxillary incisors are inclined forward or when the mandibular incisors are inclined back. (Fig. 6c.)

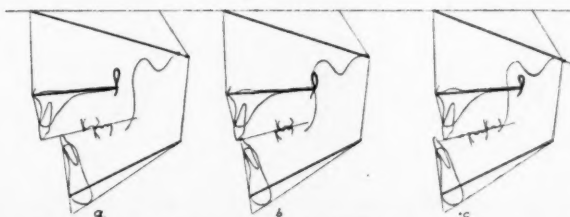


Fig. 7.—Diagrammatic sketch showing the significance of the formation of the cranial base in relation to changes in occlusion. The jaws are the same size in all the diagrams. Diagram (b) depicts normal occlusion when the jaws and the cranial base are in proportion. If the cranial base is elongated (a), a corresponding increase is obtained in the maxillary overjet. If, on the other hand, it is shortened (c), the relative position of the jaws is altered to produce mandibular overjet.

The first main factor, which is the relative difference in basal prognathism, arises from one of the factors in the facial or skull structure causing prognathism affecting the upper jaw more than the lower jaw. Such factors are:—

- (1) *The relative size of the jaw bases.* A relative difference in basal prognathism may arise when the base of the upper jaw is especially long or the lower jaw especially short.
- (2) *The relative position of the jaw bases.* A relative difference in basal prognathism may occur when the base of the lower jaw as a whole recedes in relation to the upper jaw. This may be due to:—
 - (a) long cranial base,
 - (b) relatively straight cranial base, or
 - (c) ramus inclined rearward.

- (3) *The mobility of the jaw joint.* The position of the lower jaw may to some extent be affected by a displacement of the condyles in the fossa in cases of forced bite.

The diagrams in figures 7 (a) and (b) illustrate how maxillary overjet may arise with jaws of normal size combined through a long cranial base.

The inclination of ramus constitutes a measurement characteristic of the shape of the lower jaw. (A pronounced rearward inclination gives a reduction in jaw length, from the temporo-mandibular articulation to the point of the chin.)

In the same way, three main causes of mandibular overjet may be distinguished (Fig. 8):

- (i) A relative difference in basal prognathism. In this case the lower jaw as a whole protrudes in relation to the upper jaw. (Fig. 8a.)
- (ii) A relative difference in alveolar prognathism. This may be the case when the lower alveolar arch protrudes in relation to the upper alveolar arch, the jaw-bases being in normal relationship. (Fig. 8b.)
- (iii) The inclination of the incisors may also affect the overjet, the maxillary incisors being inclined inward or the mandibular incisors inclined forward. (Fig. 8c.)

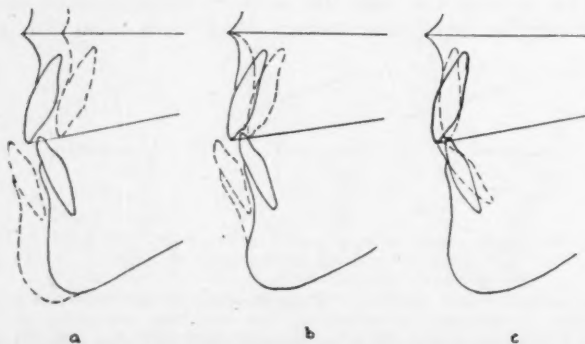


Fig. 8.—The three main causes of mandibular overjet shown by the broken lines.

- (a) A relative difference in basal prognathism.
- (b) A relative difference in alveolar prognathism.
- (c) Inclination of the incisors.

Here the relative difference in basal prognathism is caused by those prognathic factors which affect the lower jaw more than the upper jaw. Such factors may be:—

- (1) The relative size of the jaw. The upper jaw is especially short or the lower especially long.
- (2) The relative position of the jaw-bases. The base of the lower jaw as a whole protrudes in relation to the upper base due to:—
 - (a) short cranial base,
 - (b) deflected cranial base,
 - (c) ramus inclined forward.
- (3) The mobility of the temporo-mandibular articulation. The mandibular overjet is increased by a forced bite as the jaws are closed.

Figures 7 (b) and (c) illustrate how mandibular overjet may arise in normally sized jaws in combination with an exceptionally short (or very bent) cranial base.

The statistical analysis of the Swedish material indicates that the variation in sagittal occlusion is due chiefly to the first main factor, which is the difference in basal prognathism between the upper and lower jaws. Taken as a whole, the variation in occlusion thus depends mainly on factors outside the bite itself. In individual cases the three main factors may be combined in different ways. Determination of the different individual combinations is a matter of clinical significance.

Sagittal irregularities of the bite are therefore mainly symptomatic of disproportion in the various parts of the facial structure and the cranial base.

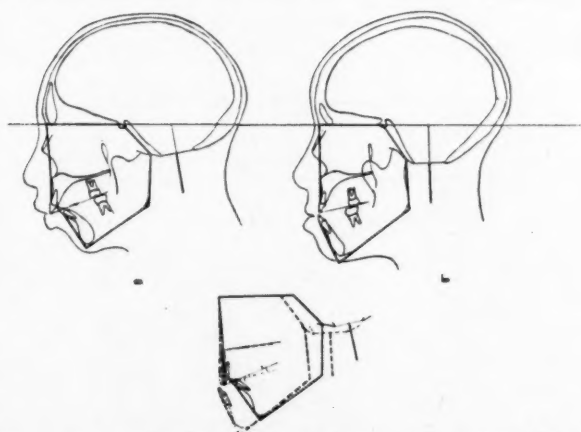


Fig. 9.—Diagrams illustrating the influence of the configuration of the cranial base on occlusion in actual cases. In (a) is shown a case with pronounced maxillary overjet and in (b) a case with pronounced mandibular overjet in primitive adult male Bantus. A comparison of these two diagrams is given in the lower figure.

Analysis has shown that the relation in size and position of the jaw are both significant factors for the occurrence of differential prognathism in the jaws. In some cases one jaw may be exceptionally long in relation to the other jaw, while in other cases the sizes may be proportionate but the relative positions may vary owing to the shape of the cranial base. Usually both factors occur in combination, either assisting or counteracting each other. The influence of the cranial base in this connection is often evident from the X-ray exposure at first sight, as will be seen from figure 9, which shows extreme cases of occlusion in Bantus. As a result of variations in the relative position of the jaws the X-ray contour of the pterygo-maxillary fissure in cases of distal occlusion may often be located considerably in front of the anterior contour of ramus, whereas in cases of mesial occlusion the contour of this fissure will be located behind the ramus contour. (Fig. 7.)

Methods of bite diagnosis such as those evolved by Simon do not furnish sufficient guidance for the purpose of choosing suitable orthodontic therapy, the degree of prognathism of either jaw being not merely a measure of the jaw-length.

It should be noted that the difference in prognathism between the jaws is independent of the degree of facial prognathism. Distal and mesial occlusion consequently occur irrespective of whether the facial type is markedly prognathic or not. Distal occlusion may therefore be found in a facial type which exhibits a low degree of maxillary prognathism, but it may also occur when the maxillary or facial prognathism is great. It is for this reason that I have chosen to use the anthropological definition of prognathism, which refers to the facial type, instead of using it as a term denoting malocclusion.

It will be seen from the material investigated that overjet is in many cases partly compensated by the inclination of the incisors when the difference in maxillary and mandibular prognathism is great. It would appear, therefore, that the position of the incisors accommodates itself to the jaw structure. Thus, the mandibular incisors are often found to have a marked forward

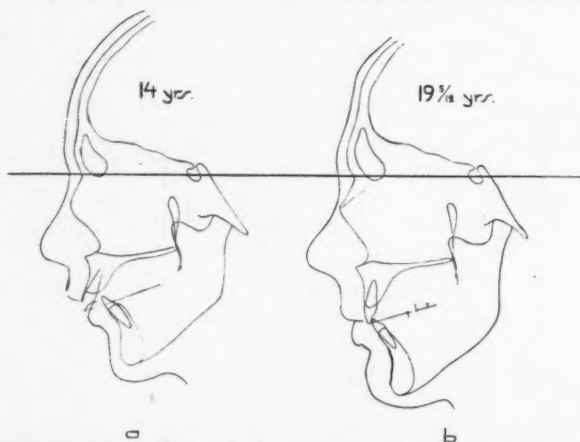


Fig. 10.—Facial diagrams of case No. 1 with extreme maxillary overjet, (a) before treatment and (b) 3 years after end of retention.

inclination in cases of pronounced maxillary overjet, and a more rearward inclination in the case of mandibular overjet. Correction of the incisors to an upright position in such cases would serve to accentuate the overjet, with the result that the difference in the prognathism of the upper and lower jaw becomes still more pronounced. Treatment in such cases should aim at correcting the incisors according to the jaw structure.

CASE ANALYSIS.

The degree of facial prognathism can easily be determined in each case. Measurements taken of the cranial base and the jaw proportions, the inclination of ramus and the jaw angle, and others, provide further information about the facial type in question. As various characteristics are combined in diverse ways in different individuals it is only possible to arrive at a more complete analysis of the facial pattern by collating these factors; it is not sufficient merely to measure a single characteristic.

For clinical needs it may suffice to attempt to establish the manner in which the three main factors determining the degree of overjet are combined, i.e., to measure the difference in basal prognathism, the difference in alveolar

prognathism of the jaws and the inclination of the incisors. By considering these factors in relation to each other it will then be possible to form an opinion as to how the case in question will respond to treatment. Provided that the prognathism of the jaw-bases is proportional in both jaws, i.e., the mutual sagittal position is normal, and the overjet is mainly due to a difference in the alveolar prognathism or to inclined incisors, the chances of successful orthodontic correction of the overjet may be considered good. On the other hand, if the difference in basal prognathism is great, the possibility of effecting normal occlusion will be remote or non-existent. This is borne out by X-ray analysis (Brodie and others) which indicates that the effect of treating sagittal malocclusion is mainly restricted to the dental area. The mutual position of the jaw-bases can apparently not be altered beyond what may be regarded as normal growth change during the term of treatment, or by the movement at the jaw joint that can be produced by a forced bite. Thompson's X-ray analysis of the jaws in the rest position is a useful method of determin-

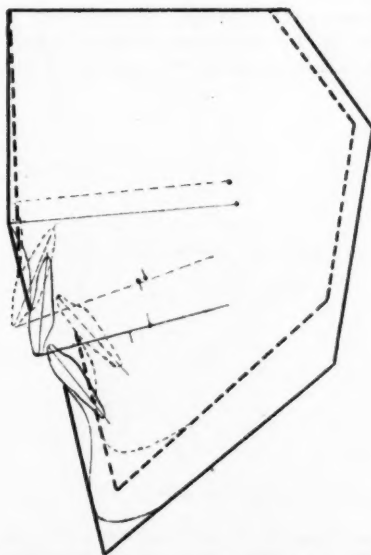


Fig. 11.—A comparison of the two diagrams shown in fig. 10.

ing whether the difference in basal prognathism is real or due to forced bite in closing the jaws. The method of analysing the position of the condyles, developed by Lindblom, is also valuable in this connection.

The inclination of the incisors is related to the facial type, the age, and other factors, possibly also with the sex. It varies widely from individual to individual, even in cases of well-positioned teeth. Nevertheless, measurements of the angles of inclination are a valuable aid in determining whether or not the overjet may suitably be corrected by altering the inclination.

From a clinical point of view the most useful measurements obtained from X-ray exposures of cases of sagittal malocclusion (maxillary or mandibular overjet) are, in the author's experience, the following:—

- (1) The difference in basal prognathism.
- (2) The difference in alveolar prognathism.
- (3) The inclination of the upper and lower incisors.

This type of X-ray analysis is illustrated in the following by diagrams of two clinical cases, the first of which exhibits pronounced maxillary and the second mandibular overjet.

Figures 10 and 11 show X-ray diagrams of the first case, in which the maxillary overjet was 14 mm. Here the base of the lower jaw is recessive in profile, compared with the upper jaw, and the difference in maxillary and mandibular basal prognathism is 4° greater than average (the mean difference in twelve-year-old boys is 7°). The difference in alveolar prognathism is of the same order, 5° greater than average (the average difference is 4°), and thus almost entirely due to the difference in basal prognathism. In this case the first main factor is therefore one of the causes of the pronounced overjet.

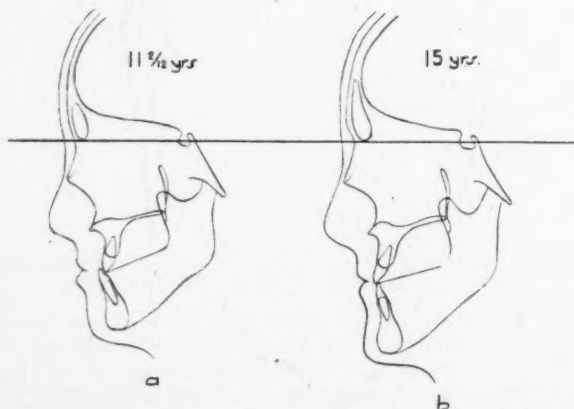


Fig. 12.—Facial diagrams of case No. 2 with mandibular overjet, (a) before treatment and (b) 2 years after end of retention.

The third factor also contributes to this effect, the inclination of the maxillary incisors being 9° greater than average. The forward inclination of the mandibular incisors (2° greater than average) has, on the other hand, the effect of slightly reducing the overjet.

By applying orthodontic treatment (labio-lingual technique) it was possible to reduce the overjet to 5 mm. The difference in basal prognathism was only diminished by 1° (from 11° to 10°) and this insignificant reduction appears to correspond to the normal growth change. (Fig. 5.) No appreciable change in the position of the lower jaw does therefore appear to have resulted from the treatment, the chief effect of which was to reduce the difference in

alveolar prognathism by 5° (from 9° to 4°) and to move the maxillary incisors through 17° to a vertical position. The inclination of the occlusion plane usually changes during growth. The change in incisal inclination has therefore been expressed in terms of the angle which in the diagram (Fig. 11) is formed on the one hand by the longitudinal axes of the maxillary incisors before and after treatment, and on the other by the angular difference between the axes of the mandibular incisors.

In the second clinical case the mandibular overjet was 3 mm. (See Figs. 12 and 13.) The prominence of the base of the lower jaw in relation to the

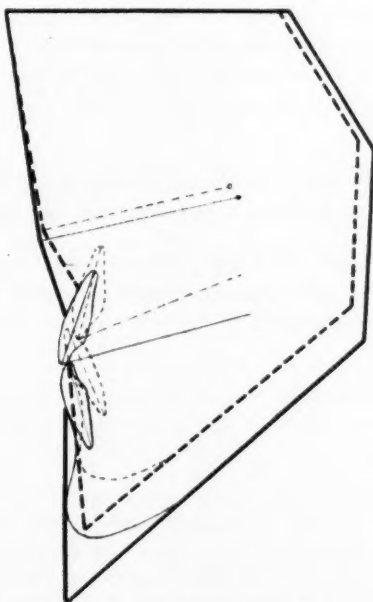


Fig. 13.—A comparison of the two diagrams shown in fig. 12.

upper jaw was 6.5° greater than average, while the lower alveolar arch protrudes 8° more than average. Here the cause of the mandibular overjet may be ascribed to a pronounced difference in alveolar prognathism, combined with an appreciable difference in basal prognathism. The inclination of the incisors, however, tends to counteract the overjet, the maxillary incisors being 5° more forward inclined and the mandibular incisors 17° more rearward inclined than the average values for boys.

Orthodontic treatment (Andrésen technique) had the effect of changing the mandibular overjet to maxillary overjet measuring 2 mm. This was accomplished by reducing the difference in alveolar prognathism by 3.5° (from -4° to -0.5°). The treatment increased the forward inclination of the maxil-

lary incisors by 7° and the rearward inclination of the mandibular incisors by 8° . At the same time the difference in basal prognathism, on the other hand, was increased by 2° (from 0.5° to -1.5°). During growth the mandibular prognathism thus increased. The changes in the bite were therefore due entirely to changes in the alveolar arches and the altered inclination of the incisors.

The same method has also been employed previously by me (1947), both in the analysis of group material and individuals, in an attempt to investigate by statistical methods the connections between the various factors in the structure of the face and skull which affect sagittal occlusion. Most measurements vary with the age, and undoubtedly also with the sex. The measurements are also subject to errors of projection, errors of measurement, etc., and the average values quoted must therefore not be taken as a generally applicable norm.

There are naturally also other ways of expressing the difference in the degree of prognathism of the jaws than the method here discussed.

Cephalometric methods have been found a valuable aid in the diagnosis of malocclusion, and it is hoped that this paper will prove a useful contribution to the discussion on the subject.

THE MECHANISM OF RECENT METHODS FOR CARIES CONTROL*

HENRY M. LEICESTER, PH.D.†

Within the past twenty years scientific study of the structure of teeth and the nature of the processes which attack them has led to a much fuller understanding of the aetiology of dental caries. It cannot be said that it is completely formulated, but there is an appreciation of many of the factors which are involved. Although there is still dispute as to the order in which some of these factors occur, the picture of caries as a complex process involving a number of closely interrelated steps is becoming clearer. It is especially evident that the interrelationships of many of these steps are so close that, if one of them is prevented from occurring, the whole mechanism may be stopped and a considerable overall reduction in caries may result.

The first indication that such a process might be possible came from the more or less empirical observation that the presence of fluorine in teeth was accompanied by a reduction in caries¹. As a result of the study of this effect, the idea of inhibiting individual steps in caries originated. Most of the more recent methods for prevention of caries have been based on this principle. It is of interest, therefore, to determine how fluorides reduce caries and to follow the developments of this principle of stepwise inhibition in its newer forms.

There are two factors involved in caries: the substance acted upon (the tooth itself), and the attacking organisms. Fluorides are concerned in both these factors.

The inorganic phase of both enamel and dentin is a special form of tricalcium phosphate, known to the mineralogists as apatite. Like all crystalline substances, apatites are built up of atoms or groups of atoms arranged in a three-dimensional oriented pattern. Each atom occupies a definite position with relation to every other atom, and the structure as a whole is referred to as a crystal lattice. The physical properties of any crystalline solid depend to a large extent upon the structure of its lattice.

A peculiarity of the apatite lattice is that different atoms or groups of atoms may enter and occupy positions normally held by calcium or phosphate. The essential lattice structure is not altered by such substitution, and therefore the physical properties are not changed to any great extent. The number and location of the atoms substituting for the normal occupants of the lattice may vary greatly and will depend upon the conditions under which the lattice was formed. In the calcifying tooth, the lattice is formed as the inorganic substance precipitates from blood serum, which is a water solution of many sub-

*Presented at the Twelfth Australian Dental Congress, Sydney, August, 1950.

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1. Armstrong and Brekhus.—J.Dent.Res., 16:309-10, 1937.

stances. Hydroxyl ions, chlorides, carbonates, magnesium, and other elements are normally present and can enter the lattice in amounts roughly proportional to their concentration in the serum. Since hydroxyl ions from the water are present in relatively large numbers, they are always found in the lattice, and the resulting precipitate can therefore be called a hydroxy apatite.

If fluorine is taken into the body in food or, more effectively, in drinking water, it will be found in the blood in concentrations which reflect its concentration in the diet. From the blood, it will enter the apatite lattice which is forming and, again, the concentration in the apatite will reflect that in the blood. Fluoride will therefore be found throughout the entire mass of material which formed while it was present in the blood. Although the physical properties of the fluorinated apatite are not changed very greatly by this substitution of fluoride in the lattice, there is some increase in the hardness, brittleness, and acid insolubility of the enamel and dentin^{2,3}.

When the drinking water contains more than 1.5 parts per million of fluorine, the concentration in the blood reaches a critical threshold value. Below this level, the only effect is deposition of fluorine in the apatite lattice. Above this level, body mechanisms are disturbed. To accumulate enough phosphate at a given site where calcification is to occur to permit precipitation of calcium phosphate, the body uses certain catalysts, or enzymes, known as phosphatases. These are specifically inhibited or poisoned by fluoride. Therefore, when the concentration of blood fluoride is sufficiently high, the action of the phosphatases is hindered, and normal calcification is disturbed. This results in the condition known as mottled enamel.

Thus, the presence of fluorides in the diet when teeth are calcifying results in deposition of fluorine in the inorganic apatite lattice and may also prevent formation of the lattice itself.

It is not necessary, however, that fluoride be built into the teeth when they are forming. Even after calcification and eruption are complete, the possibility remains that surface chemical reactions can occur. This is because the hydroxyl group of the hydroxy apatite often occupies positions in the lattice which are located on the enamel surface. There they can undergo an exchange reaction with topically applied fluoride ions at periods subsequent to the eruption of the tooth⁴. The fluoride which thus enters the tooth differs in no way from that built into the lattice during tooth formation. The only distinction is that it will be found only at the enamel surface instead of distributed throughout the entire tooth.

There is also another way in which topically applied fluorides can be held to the enamel surface. Fluoride ions are concentrated and held on the surface, without reacting chemically, by purely physical forces. These ions can then react with calcium salts from the saliva to form crystals of calcium fluoride

2. Phillips and Swartz.—J.A.D.A., 37:1-13, 1948.

3. Volker, Bonner, and Brudevold.—J.Dent.Res., 22:228, 1943.

4. Falkenheim and Hodge.—J.Dent.Res., 26:241-6, 1947.

on the tooth surface. The existence of such crystals has been shown by electron microscope studies⁵.

Such, then are the effects which can be produced by fluorine under varying conditions on the structures of enamel and dentin.

Turning now to the second factor in caries, the attacking organism, we find that most of the work has been concentrated on *Lactobacillus acidophilus*, which ferments sugars to produce lactic acid. The acid can then dissolve the apatite of the tooth. It was shown above that the solubility of apatite in acid is reduced by the incorporation of fluoride in the lattice. This probably in part accounts for the reduction in caries observed in such teeth. The insolubility is not complete, however, and if more acid is produced, solution will eventually occur. It therefore seems improbable that this is the sole cause of caries reduction by fluorides.

A more important mechanism emerges when the process of fermentation itself is considered. Fermentation is a special case of one of the most important general processes of the animal kingdom: carbohydrate oxidation. This is the process by which a large part of the energy required for life is obtained by all animals, from the single-celled to man. In its first half, the process appears to be identical for all animals, and this is the portion of the cycle which gives lactic acid. Higher animals further oxidize the acid and obtain more energy, but the *lactobacillus* carries the oxidation only to the stage of acid production.

Chemically speaking, the mechanism involves adding phosphate groups to the two ends of the six-carbon chain of a sugar, breaking the thus weakened structure in the middle to produce two compounds each containing three carbon atoms and a phosphate group, and then splitting off the phosphate and forming lactic acid. Unless the phosphate groups are added and then removed, the acid cannot form. To add or remove phosphates, however, requires, in the animal cell, the presence of phosphates, the enzymes previously mentioned. These are inactivated by fluorides. Therefore, fluorides prevent the formation of acids from carbohydrates. In so doing, of course, they also prevent the organism from obtaining much of the energy it needs for its life processes. It is a fact that, when fluorides have been built into the tooth, *lactobacillus* counts tend to be low^{6,7}.

It is important to bear in mind, however, that it is the soluble fluoride ion that is toxic to phosphate, and not the insoluble fluoride found in the apatite lattice or on the surface as calcium fluoride. The latter is inactive as long as it remains fixed in the solid form. When the *lactobacillus* has produced enough acid to dissolve a little fluoride ion, the inhibiting action begins. It is probable that this accounts for the failure of lead fluoride to reduce caries to any great extent^{8,9}, although it reduces enamel solubility far more than does sodium fluoride when topically applied¹⁰. When teeth are treated with lead fluoride,

5. Scott, Picard, and Wyckoff.—*J.Dent.Res.*, 28:642-3, 1949.

6. Jay and Arnold.—*Dental Caries and Fluorine*, Washington, D.C., 1946, pp. 43-6.

7. Finn and Ast.—*Science*, 106:292-3, 1947.

8. Galagan and Knutson.—*Pub. Health Reports*, 62:1477-83, 1947.

9. Bibby, de Roche, and Wilkins.—*J.Dent.Res.*, 26:446-7, 1947.

10. Buonocore and Bibby.—*J.Dent.Res.*, 24:103-8, 1945.

both lead and fluorine probably enter the lattice, and the replacement of calcium by lead reduces the solubility so much that no fluoride can be dissolved out to inactivate the bacterial phosphatase, and acid can then attack areas which were not penetrated by the fluoride.

It can thus be seen that the action of fluoride involves both the tooth structure and the attacking bacteria. It is built into the tooth and remains there until called into action by the very process which it tends to inhibit. This process is one of the important steps in caries production: the fermentation of carbohydrate.

Thus, the action of fluorides first suggested the general principle of caries prevention already referred to—the interference with some important step in the caries mechanism. Further techniques of caries prevention can be considered in the light of this principle.

The principle is actually involved in the oldest method used for prevention of caries—the elimination of sugar from the diet. Obviously, if the fermentable material is not present, the fermentation step will not occur. However, the method was never considered in the light of the principle under discussion. Further, removal of sugar from the diet differs in a very important respect from the action of fluorides. It requires a voluntary effort on the part of the patient. Fluorides in the tooth, on the other hand, act almost automatically, without the need for any voluntary action by the patient. This is a great advantage, since the necessity of giving up a very desirable dietary component presents a psychological barrier which is not easy to surmount.

The other methods which are today recommended for caries prevention also depend on interference with the caries mechanism. They have been worked out with this principle definitely in mind. They differ somewhat in the degree of voluntary action required from the patient, but none are as demanding as the method of eliminating sugar from the diet.

The use of ammoniated dentifrices has attracted almost as much attention as have the fluorides. The principle involved here is that the ammonium ion interferes with the growth of the lactobacillus¹¹. This has been shown to be true in the laboratory, and preliminary clinical tests indicate favourable results^{11, 12}. Various substances may be used to furnish the ammonium ion, but all demand a source which will remain around the teeth and liberate the ammonium ion relatively slowly over a long period of time. Urea apparently does this and, in addition, helps to dissolve the plaque material¹³, but the taste is unpleasant. Dibasic ammonium phosphate is also a satisfactory source. Most of the formulas used at present contain both urea and dibasic ammonium phosphate, with enough added flavouring agents to make the dentifrice palatable. Powders are, in general, better than pastes, because they do not liberate any ammonia until they are moistened in the mouth. However, pastes are available which seem to maintain their strength for some time.

11. Kesel, O'Donnell, Kirch, and Wach.—*Am.J.Orth.Or.Surg.*, 33:68-101, 1947.

12. Henschel and Lieber.—*J.Dent.Res.*, 28:248-57, 1949.

13. Stephan and Miller.—*Proc.Soc.Exper.Biol.Med.*, 55:101-4, 1944.

The degree of voluntary co-operation required from the user of an ammoniated dentifrice is higher than that required when fluorides are used. The user must brush his teeth with the dentifrice after a meal. There is no value in applying the material and then removing it while chewing and swallowing food. Preferably, such dentifrices should be used after each meal to maintain the ammonia level as long as possible.

As stated above, the preliminary tests on these dentifrices have been promising, but fully adequate studies have not yet been reported. An elaborate study by Kesel is now nearing completion, and by the end of 1950 a definite estimate of the effectiveness of ammoniated dentifrices should be available. In the meanwhile, it can at least be said that they will clean the teeth as effectively as any dentifrice and, in addition, may have caries-preventive properties.

Another widely publicised method is the Gottlieb impregnation technique¹⁴. This is based on a different theory of the aetiology of caries. Gottlieb has assumed that caries is produced solely by attack of proteolytic organisms on the protein structures of the teeth¹⁵. When these are destroyed, the inorganic portions lack support and are easily lost. Therefore, Gottlieb wished to seal off the organic pathways which he believed were invaded by proteolytic organisms. To do this he treated the tooth with a 40% zinc chloride solution, which he believed impregnated at least the outer portion of enamel protein. This was followed by application of 20% solution of potassium ferrocyanide to precipitate insoluble zinc ferrocyanide in the outer layers of the lamellae and prism sheaths, thus blocking off possible invasion pathways.

This method has been widely criticized from the theoretical point of view. It is true that evidence has been accumulating recently that proteolytic processes are involved in caries, but few investigators assign them the exclusive role that Gottlieb did. There is also doubt that impregnation is complete or the blocking process effective. The method does not prevent some proteolytic changes¹⁶, but the possibility exists that the substance itself, or the zinc or ferrocyanide ions, may have a toxic action on lactobacilli similar to that of fluorides. It is thus clear that the theoretical basis of the Gottlieb treatment is open to question, and much work must be done to evaluate it properly.

The question of the clinical results is equally confused. Gottlieb and his colleagues have claimed caries reductions of 80-90% after use of this technique, but they have never presented experimental evidence which can be subjected to statistical evaluation. Studies to determine the validity of the method are now being carried on in various laboratories and clinics. It is to be hoped that more definite answers to the many questions involved will soon be forthcoming but, at present, little more can be said than that the method is apparently harmless when used as described by Gottlieb, and that the possibility remains that it may be of value in caries prevention.

The three methods described above are the only ones now actually employed in clinical use. Back of them lie a series of methods which show promise, but which must be carefully studied in greater detail before their success can be evaluated. These include chlorophyll and penicillin dentifrices.

14. Council on Dental Therapeutics.—J.A.D.A., 38:147-8, 1949.

15. Gottlieb.—Dental Caries, Philadelphia, Lea and Febiger, 1947.

16. Dannenberg and Bibby.—J.Dent.Res., 29:177-81, 1950.

Much has been claimed for dentifrices containing chlorophyll derivatives, not only as caries preventives but also in their effects on curing periodontal diseases and eliminating mouth odours. It will probably require several years before the full implications of these claims have been worked out. The work to date, however, shows definite promise¹⁷.

Enough has been done with penicillin dentifrices to show that they are capable of reducing caries¹⁸, but their use involves a danger that they may establish a sensitivity to penicillin which might be serious if the antibiotic were later required for treatment of a severe illness. Therefore, it seems likely that this method of caries prevention will be of only limited value.

Behind these methods there are still others which have not as yet emerged from the laboratory for clinical testing. Some day it may be possible to add some substance to sugars which will prevent their fermentation in the mouth. As yet, however, no such substance has been found. Compounds or elements other than fluorine may be built into the tooth with production of even greater caries resistance than is caused by fluorine. These are only speculations which reveal the line dental investigation is following today.

Whatever methods are eventually found to be most effective, there seems little doubt that they will depend upon the principle of interfering with some step in the caries mechanism. Thus, each new advance in the theory of the aetiology of caries opens new prospects for developing preventive methods. Similarly, each new method of prevention casts more light on the mechanism of caries. The future holds much promise, and the co-operation of the laboratory investigator and the clinical worker offer our greatest hope for the future elimination of dental caries.

17. Rapp.—Paper presented to International Association for Dental Research, Chicago, June, 1949.

18. Hill and Knieser.—J.Dent.Res., 28:263-6, 1949.

The **ADA** DENTAL JOURNAL
of AUSTRALIA
EDITORIAL DEPARTMENT

VALE

Some six years or more have passed since the opportunity was afforded us of occupying the Editor's chair. These six years have been of the greatest interest in the development of the Journal and the growth of the Association activities.

It is not always possible to effect radical changes in a publication which is designed for a particular purpose and which must maintain a dignified professional appeal. This task may be extremely difficult if financial considerations enforce an extremely restricted presentation.

It is important, however, to record now the Editor's appreciation of the magnificent co-operation afforded by the Executive Committee and Journal Committee, which has enabled the development of the Journal to reach a stage where those who have such things at heart can feel that the official publication of the Australian Dental Association, New South Wales Branch, has made its mark in the professional literature of other lands.

To many of our readers and to those who have criticized some of our presentations we would say this: there is no cause to fear, in fact there is reason to be proud, when frequent reference is made in the leading overseas journals to our own contributors. Such references have occurred in the form of abstracts, extracts and reprinting of selected articles from its pages, and reference to the authorities who have contributed.

Some members desire what they term articles of a more practical nature and such a desire can well be appreciated, since much of dentistry is of a so-called practical nature.

Articles of that type, to be of any use, require adequate illustrative material to provide a very necessary support, and this means money, time and the technical resources of those who would contribute.

No journal can survive without contributors, and the contributors must come from the profession or closely related sources.

To those who have criticized we would say: how much have you contributed towards the Journal during the last six years?

To those who have contributed we would say: thank you, sincerely, for by your efforts have you ensured the successful presentation of material for the benefit of the Journal and your fellow-practitioners; may you contribute further material, no matter how controversial or unusual, and thereby inspire others to do likewise!

We wish the Journal and its new Editor every success.

Correspondence

"APPRECIATION"

Sir,

I would ask this opportunity of expressing my sincere appreciation to the members of the Australian Dental Association, New South Wales Branch, for the many letters of commendation which I have received on the announcement of my appointment to the Chair of Conservative Dentistry in the University of Otago.

Especially do I desire to thank the many members who were associated in expressing in a material way their esteem for the work that I have done as Secretary of the Association and Editor of the "Journal." They can be assured that, in returning to the academic fields, I will carry many memories of the friendships forged over the years which fortune has allowed me to spend in the service of the Association.

The gift will bear a constant and personal reminder of the trust and good wishes bestowed upon me and of those fruitful years occupied in the Secretary's chair.

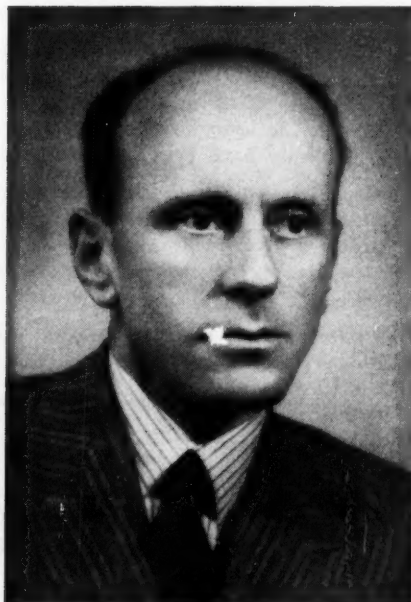
The loyalty and enthusiasm of the members of the Executive Committee, the country Divisions, the Officers and staff have certainly made my task much easier and developed an *esprit de corps* which I hope time and change will not erase.

I wish you all a future brimmed with success.

Yours sincerely,

ROBERT HARRIS.

News and Notes



PROFESSOR ROBERT HARRIS

The appointment of Mr. R. Harris, M.D.S. (University of Sydney), to the Chair of Conservative Dentistry within the University of Otago, New Zealand, has recently been announced.

This appointment follows a very distinguished career which began in 1929 when Mr. Harris became an undergraduate in the Faculty of Dentistry of the University of Sydney. In 1932 he graduated as a Bachelor of Dental Surgery with Honours (Class I) and commenced general practice in Summer Hill. In 1935 he received two University appointments as Lecturer in Operative Dentistry and Honorary Tutor in Radiology.

In 1938 Mr. Harris was admitted to the degree of Master of Dental Surgery for a thesis entitled, "The influence of mechanical factors in the design of inlay cavity preparations." The following year he was appointed Assistant Superintendent of the United Dental Hospital of Sydney. In 1945 Mr. Harris was appointed Senior Lecturer in Operative Dentistry and in 1946 became the Editor of the *Dental Journal of Australia*, following the death of Dr. P. A. Ash.

In 1948 Mr. Harris was appointed Secretary of the Australian Dental Association, New South Wales Branch, and in 1950 Honorary Secretary of the Australian Dental Association and Secretary of the Twelfth Australian Dental Congress. The unqualified success of the Congress was largely due to the

magnificent work of Dr. J. V. Hall Best, the President of Congress, and Mr. Harris.

During his years on the University staff, Mr. Harris took great interest in post-graduate studies in New South Wales and was a post-graduate lecturer to the Dental Study Club of Brisbane and the Queensland Dental Forum.

As Secretary of the New South Wales Branch of the Australian Dental Association, Mr. Harris gave his services unstintingly to the profession. His organising ability and brilliance in recognizing and anticipating the fundamentals of dento-political problems have been of inestimable benefit to the profession in this State.

In his new appointment Mr. Harris will be working with another distinguished Australian, Professor John Walsh, a graduate of the Melbourne University and Dean of the Faculty of Dentistry within the University of Otago.

The profession offers its congratulations to Professor Harris, and he and his family go to New Zealand early in 1951 with the best wishes of every member of the profession in this State.—E.R.M.

PRESENTATIONS TO THE RETIRING MEMBERS OF THE EXECUTIVE COMMITTEE, 1949-50

On Monday, 27th November, 1950, members of the Executive Committee and their wives gathered at the Hotel Metropole to make presentations to Dr. J. V. Hall Best, Dr. R. M. Cloutier and Mr. J. W. H. Skinner, three members of the retiring Executive who were not seeking re-election at the Annual Election.

The Executive Committee themselves made these presentations as a mark of esteem and appreciation for the many years' service given by these members.

The occasion also marked the presentation to Miss P. M. King, formerly Assistant Secretary of the State Branch, of a travelling clock as a mark of the appreciation of the Association for her services during her years of office.

On behalf of the Executive Committee, Dr. Magnus made the presentation of a suitably inscribed ice bucket to Dr. Hall Best; Dr. F. E. Helmore presented four engraved pewter tankards to Dr. Cloutier; and Dr. A. G. H. Lawes made the presentation of a suitably mounted and inscribed ash-tray to Mr. Skinner. The recipients expressed their appreciation of the gifts and the sentiments which inspired them.

The opportunity was also taken by the retiring Executive to wish farewell to Mr. Harris who would be taking up his appointment to the Chair of Conservative Dentistry at Otago University early in 1951. Professor A. J. Arnott proposed the toast to Mr. and Mrs. Harris and wished them every success in the future. Mr. Harris suitably replied.

XIth INTERNATIONAL DENTAL CONGRESS

LONDON, JULY, 1952.

Information has been received from the organisers of the XIth International Dental Congress concerning details of active membership and other forms of membership of the Congress, which has been arranged by the Federation Dentaire Internationale. We publish hereunder these details for the benefit of prospective members.

Conditions and categories of membership have been laid down in the recently compiled Rules of Congress. These state that: "Every practising dentist possessing a legal qualification to practise dentistry in the country in which he received his professional education, or in the country in which he lives, may become an active member of the Congress after approval by the National Committee representing the F.D.I. in those countries (in the case of Germany by the Membership Committee appointed by the F.D.I.), and on payment of the appropriate subscription. Medical graduates and licentiates and members of other scientific professions may also be admitted as active members."

Candidates for admission as members must forward an application on the official forms to Mr. H. Parker Buchanan, Secretary General, XIth International Dental Congress, Organising Committee, 13 Hill Street, Berkeley Square, London, W.1. Application forms are obtainable from the National Societies and Committees of the F.D.I., or direct from the Secretary of the Congress. Subscription for an active member is £5 0s. 0d. if the postal date on the application form is prior to January 1, 1952. After that date, the subscription will be £5 10s. 0d. Subscriptions can now be received and cheques should be made payable to the "XIth International Dental Congress."

Individual members of the F.D.I. of not less than two years' standing, and whose subscriptions are not in arrears, shall be admitted to full active membership on payment of half the above subscription.

Undergraduates in dentistry and medicine may be admitted as Associate Members on completion of the appropriate membership form by the payment of a subscription of 10/- (Ten shillings). For all other Associate Members (Dental Nurses, Hygienists, Technicians, Trade Exhibitors or their Representatives, Relatives of Members of Congress, providing they are not practising) the subscription will be £2 10s. 0d. if received before January 1, 1952, or £2 15s. 0d. if received after that date.

The programme of Scientific Papers is complete. It therefore follows that Members who wish to take an active part in the scientific deliberations of the Congress may do so by joining in the discussions or by presenting original communications in the form of Table Demonstrations and Scientific Exhibits. As the number of these is also strictly limited, Members wishing to take an active part in any of the Sections, whether they desire to give a Table Demonstration or to present the results of their investigations and research work by demonstration or the exhibition of photomicrographs, wall-charts, etc., are strongly advised by those Committees to make an early application to Mr. G. A.

Morrant, Institute of Dental Surgery, Eastman Dental Hospital, Gray's Inn Road, London, W.C.1. giving the following particulars:—

1. Name, Qualifications and Address.
2. Whether connected with a Dental Teaching Institution and, if so, in what capacity.
3. A short summary of the material to be presented.
4. Method of presentation, i.e., Table Clinics, Wall Display, Exhibit of Specimens or Models, Film, etc. (Regarding Films it is necessary to state the approximate running time and whether the Film is in Colour, Monochrome, Sound or Silent, and also its size.)

At a later date, the Committee will send to all Demonstrators and Exhibitors, whose presentations have been accepted, a detailed questionnaire ascertaining their exact requirements.

Attention is drawn to the fact that the presence of the author is not necessarily required for the showing of the films, the exhibition of wall-charts, photomicrographs and other scientific exhibits.

It is hoped that these demonstrations and exhibits will be fully representative of all the various branches of dentistry and all dental aspects of the allied sciences.

The Accommodation Committee, which has been formed to give assistance to intending visitors to the Congress, request anyone writing to them to state the type of accommodation required and the possible duration of their stay in London. As the Committee will be receiving a large number of requests for accommodation, visitors are strongly advised to make an early application to Mr. Seymour Robinson, Chairman of the Accommodation Committee, XIth International Dental Congress, 13 Hill Street, London, W.1.

FAR NORTH QUEENSLAND DENTAL CONVENTION, 1951

You are recommended to arrange your vacation to coincide with the Convention to be held in Cairns from June 6 to June 12, 1951, inclusive.

A tentative programme has been arranged covering social as well as professional activities. Clinics and lectures have been set down for Thursday, Friday, and Saturday morning, and clinics only for Monday. Details of the clinical material to be presented are not yet available.

Trade Exhibits, also, will be an integral part of the Convention.

Sports and entertainment will be amply catered for, and the ladies will not be forgotten.

The membership fee is £5 5s. 0d. inclusive, except for any Barrier Reef fishing or Reef island trips. An eligible member, who has paid a Membership

Convention fee and is precluded from attendance through illness or other valid reason, shall be entitled to a refund of this fee. Notice of inability to attend the Convention and application for refund of fee must be made not later than the day prior to commencement of the Convention. Provided that, where circumstances render such notice impracticable, the Sub-Branch will consider each case on its merits.

Accommodation is going to be a real problem unless you register early; Cairns is deservedly popular with visitors in June. Please mark off the dates in your Appointment Book and send in your application form right away.

I. S. MACDONALD, Hon. Secretary,
c/o. Dental Department,
Cairns Base Hospital.

HONORARY DENTIST

Applications are invited for the position of Honorary Dentist (female) at the Rachel Forster Hospital for Women and Children, Pitt Street, Redfern. Honorarium £3/3/- per session, maximum of two (2) sessions per week.

Applications together with copies of testimonials to be in the hands of the undersigned not later than Wednesday, 31st January, 1951.

MARY C. PUCKEY,
Chief Executive Officer and
Medical Superintendent.

OBITUARY

WILLIAM FAULKNER ORMISTON.

The death of William Faulkner Ormiston occurred on 13th November, at his home, "The Rocks," Cowra, at the age of 80 years. His death followed a chill contracted during his visit to Sydney to attend the recent Dental Congress.

The late Mr. Ormiston was born in County Cavan, Ireland. At an early age he came to Australia with his parents who settled in the Albury district. He finished his education at the Albury Grammar School.

At the age of 18 years, he was apprenticed to Thomas Skean, an English dentist practising in Albury. He went to Cowra in 1892 and carried on his dental practice there until his death.

During his lifetime in Cowra he was associated with a number of local institutions. Early in the century he was an alderman of the Municipal Council

and was Mayor for a period; he was also one of the founders of the Bowling Club, of which he was patron for some years. He was an office-bearer of The Old Grammarians' Association, Albury, and was elected patron some years ago.

Throughout his career he strove for the advancement of the dental profession and for the esteem in which it is held in this country today.

Mr. Ormiston is survived by four sons and two daughters.—J.M.O.

MEDEL NEVIN.

The death occurred recently in Chicago, of Dr. Mendel Nevin, internationally famous dentist, author and lecturer.

This eminent member of the profession graduated from New York University Dental School in 1907. While in active dental practice, he held positions as Oral Surgeon and Consultant Anaesthetist at hospitals located in New York and its suburbs. Later, he established a company which is now one of the world's largest manufacturers of local anaesthetic products, and he was a pioneer in the teaching of local anaesthesia.

Dr. Nevin was author of the standard textbook, "Conduction, Infiltration and General Anaesthesia in Dentistry," and was proprietor of *Dental Items of Interest* and editor of *Modern Dentistry*.

Under his supervision the first motion picture in America on a specialty of dentistry was made in 1917. He later produced colour and sound motion pictures for the teaching of local anaesthesia injection technique.

Dr. Nevin was a well-known philanthropist and, through the company of which he was president, he made many grants to schools, clinics and hospitals for dental research.

Association Activities

AUSTRALIAN DENTAL ASSOCIATION

(NEW SOUTH WALES BRANCH)

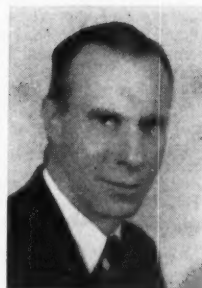
OFFICE-BEARERS, 1950-51.



Dr. A. G. H. LAWES
Vice-President



Dr. E. R. MAGNUS
President



Dr. F. E. HELMORE
Vice-President



Mr. F. R. REID
Honorary Treasurer

EXECUTIVE COMMITTEE:

Bastian, E. H.
Edney, N. E.
Finnie, H. M.
Gee, E. J.
Grainger, W. A.
Hunter, A. G.

Krauss, R.
Leeder, R. G.
Norton, R. Y.
Sullivan, H. R.
Tompson, Ralph
Wilson, R. W.

ANNUAL GENERAL MEETING

Extract from the Minutes of the Annual General Meeting of the Association held in the Lecture Hall, B.M.A. House, 135-137 Macquarie Street, Sydney, on Tuesday, 28th November, 1950, at 8 p.m.

Present: Dr. E. R. Magnus, President, in the Chair, and an audience of 77 members and visitors.

Apologies: Mr. M. J. Griffin, Mr. R. L. Currie, Mr. G. M. Cox, Mr. L. Cooper, Mr. L. MacKenzie and Mr. C. D. Reynolds.

Minutes: The Minutes of the Annual General Meeting held on 22nd November, 1949, were read and signed as a correct record.

Presidential address: In his address the President thanked the Executive members for their work, loyalty and support during the preceding twelve months. It had, he said, been a particularly heavy year for all Executive members, and the Honorary Officers and Mr. Edney had given unstintingly of their time and had been of tremendous assistance in the arduous task of administering the affairs of the Association. He also commended the staff for their work and loyalty and expressed his personal thanks for their efforts during the year.

He pointed out that three members of the present Executive Committee were retiring: Dr. Hall Best, Dr. Cloutier and Colonel Skinner. However, their places would be taken by other members who, he felt sure, would give great service to the Association.

It was regretted that Dr. Best's name was not among those nominated for re-election. He had been a member of the Executive Committee for twenty-three years and had held the office of President for three years (from 1935-1937). He was now, for the second time, Federal President and the holding of that office was his main reason for retirement from the Executive; Dr. Best felt that it would be better for the Federal President to devote his whole time to Federal activities. The President said he hoped that Dr. Best would eventually return to the Executive. The services he had given, not only to the Association but to the whole profession, were without parallel in this State.

In speaking in appreciation of Dr. Cloutier's services, the President said he had been a member of the Executive for seventeen years. To date the Association had had only one other Honorary Treasurer, as Dr. Cloutier had succeeded Mr. Harold Holland who had been the original holder of that office. Dr. Cloutier was now retiring from active practice.

Dr. Magnus continued by saying that Colonel Skinner had not been a member of the Executive for very long, comparatively, but he had during his period of office been of great assistance to the Committee, particularly during the past year. He was retiring because of many other commitments, particularly in relation to his military duties which now had to take precedence over others. The President voiced the hope that Mr. Skinner would eventually return to the Executive and expressed his personal appreciation of the work he had done.

The President stated that, unfortunately, the Association was also losing the services of two of the most valued members of its staff: Mr. Robert Harris and Miss Phyllis King. The Executive Committee had held a cocktail party at the Hotel Metropole on the previous evening to bid farewell to them. Miss King had been presented with a small travelling clock, and presentations had also been made to the three retiring members of the Executive from their fellow-officers.

Dr. Magnus spoke very highly of Miss King, saying that she had been with the Association for almost three years and had done splendid work which was appreciated by the members of the Association and the staff, and particularly by the Executive Committees during that period. Miss King had resigned for the purpose of going abroad and the President said he felt sure that all members would join him in wishing her a very happy and successful trip overseas.

Mr. Harris, it was stated, would be leaving Sydney early in February to take up his professorship in New Zealand, and he was being succeeded in his capacity of Secretary to the Association by Mr. E. F. Hewlett. The President then introduced Mr. Hewlett to the meeting and said he felt quite sure that he would be a worthy successor to Mr. Harris. Mrs. MacLean, who had taken Miss King's place as Assistant Secretary, was also introduced.

The President thanked the scrutineers of the ballot for the annual election for their generous assistance to the staff and recorded a pleasing increase in the number

of votes cast by approximately one hundred. This suggested that members were taking a greater interest in their Association.

Dr. Magnus then concluded his report with good wishes for the coming festive season.

Report of the Executive: The report of the Executive Committee for the year just concluded having been circulated, the President congratulated the Secretary on the compilation of the report.

It was resolved that this report be received.

Balance Sheet: In presenting the Balance Sheet for the year ended 30th September, 1950, which had been circulated to members, the Honorary Treasurer expressed his willingness to answer any questions that members might wish to ask in regard to the Association's finance and said that he felt very pleased to be able, in his retiring year, to present a Balance Sheet showing a surplus of £1,446. However, he felt that this reflected credit not so much upon the Honorary Treasurer as upon the Executive as a whole. He paid high tribute to the former Assistant Secretary, Miss King, who had carried out the tremendous amount of work involved in the compilation of the Balance Sheet and the various supporting accounts and who had always been of great assistance to him.

It was resolved that the Balance Sheet as at 30th September, 1950, and its supporting statements be adopted.

Honorary Members for 1951: It was resolved that the following members of the profession be appointed Honorary Members of the Australian Dental Association, New South Wales Branch, for the year 1951:—

The President, Australian Dental Association; the President, British Dental Association; the President, American Dental Association; the President, New Zealand Dental Association; the President, British Medical Association (New South Wales Branch); Professor Harvey Sutton; Mrs. John Barr, B.D.S.; Dr. P. C. Charlton; Professor A. J. Arnott; Dr. N. E. Goldsworthy; Dr. E. C. Gates; Professor R. Harris; Mr. W. P. Riordan; Mr. O. J. McDermott.

Appointment of Auditors: It was resolved that Messrs. C. O. Beck and Wayland be appointed Auditors to this State Branch for the financial year ending 30th September, 1951, and that their fee be fixed at seventy-five guineas per annum.

Executive Committee: The Returning Officer announced the results of the election to the Executive Committee* for the ensuing year.

The Chairman stated that, once again, this return demonstrated that the members had confidence in the retiring Executive and he welcomed the three new members who had taken the place of the three non-standing members of the 1949-50 Committee.

Presentation to Mr. Robert Harris: The President said he had felt that members of the Association would wish to participate in making a small presentation to Mr. Harris and for this purpose it had been suggested that those who desired to do so contribute the sum of five shillings towards such a token. He announced that the sum of approximately £98 had been forthcoming and an Exakta (Varex) camera and accessories had been purchased and suitably inscribed. He then called upon Dr. Hall Best to speak.

Dr. Best said the Chairman had imposed on him a most difficult task inasmuch as his personal feelings in this regard were somewhat too deep for words. "I feel," he said, "that we all regard Bob with affection; his many attributes, his tolerance, his diplomacy, his academic achievements and his brilliant mind are all well-known to us. We see him go with infinite regret but, in accepting the Chair of Conservative Dentistry in the University of Otago, he is returning to his first love—teaching—and I think that is a good thing.

In the three years we have had Bob Harris with us he has done a tremendous job for the Association, and not only for the Association but for the whole profession. He has given us wholeheartedly all that only he could give and I feel we owe him an overwhelming tribute of gratitude.

We look forward to having him back in Australia at some future time for, if ever a man had many friends with warm hearts and strong hands, Bob Harris is that man. Professor, we wish you well."

The President warmly supported the tributes paid by Dr. Best to Mr. Harris and expressed his deep personal regret for the severance of an association that had meant so much to him both in an official capacity and otherwise. In presenting the camera, he asked that Mr. Harris accept this token, knowing that it carried with it the warmest regard and good wishes of every member of the Association. The meeting responded with acclamation.

In reply, Mr. Harris said that naturally he was delighted with the gift made to him from the members but he felt somewhat embarrassed at its magnitude which far

*See page 633 of this issue.

outweighed any services he had been able to render as Secretary of the Association and Editor of the Journal.

When he had learned that some token of appreciation was being made, he expressed the desire that it be in a form which would enable him to use it in the service of dentistry and this camera had therefore been selected because of its great adaptability for clinical work. With it he felt sure that its value would be returned to the profession in the form of excellent clinical material which could be permanently recorded for the benefit of students and practitioners alike.

He felt that he could not let the occasion pass without expressing particularly to the staff his appreciation of their services in carrying out the many duties which were now part of the Association's activities. He felt that in Miss King and the other members of the staff he had been given such a measure of support that he could undertake without hindrance the many and varied problems of public relations between the Association and the public, the Association and its members, and the profession and the public generally. The ordinary member probably did not come into contact with such problems but, nevertheless, they were many and of importance to the welfare of the profession. He was therefore pleased to have this opportunity of publicly expressing his appreciation of the work of the staff.

In conclusion, he thanked Dr. Magnus and Dr. Best for the very generous words of praise and, finally, all those members who had contributed to such a handsome gift.

Dr. Magnus now vacated the chair to attend the first meeting of the newly-elected Executive Committee and called on Dr. Best to act as Chairman for the meeting whilst Mr. E. C. Slater presented his films on "The beauties of Jenolan and other caves" and "Padirac," a documentary film of an exploration of the subterranean Black River in France.

The Committee later returned to the meeting and the Chairman announced the re-election of Dr. Magnus as President of the State Branch for the year 1950-51.

The President then resumed the Chair and introduced to the members the Honorary Officers for the coming year. He then expressed to Mr. Slater the thanks and appreciation of the members for his excellent films and commentary and for his generosity in giving his services for this purpose.

The meeting terminated at 10 p.m.

EXECUTIVE COMMITTEE MEETING

Extract from the Minutes of the Meeting of the Executive Committee held in the Council Room, B.M.A. House, 135-137 Macquarie Street, Sydney, on Monday, 13th November, 1950, at 7.45 p.m.

Present: Dr. E. R. Magnus, President, in the Chair; Dr. A. G. H. Lawes, Vice-President; Dr. R. M. Cloutier, Honorary Treasurer; Mr. N. E. Edney, Mr. H. M. Finnie, Mr. R. G. Leeder, Mr. R. Y. Norton, Mr. F. R. Reid, Mr. J. W. Skinner, Mr. H. R. Sullivan, Mr. R. Tompson, Mr. R. W. Wilson, Mr. R. Krauss, Mr. W. A. Grainger; Dr. J. D. Oddy, South Coast Division; Dr. A. G. Rowell, Western Division; Mr. C. D. Reynolds, Newcastle and Hunter River Division.

Apologies: Dr. F. E. Helmore, Vice-President; Mr. L. Mackenzie, Blue Mountains Division; Mr. S. H. Neal.

In attendance: Mr. Robert Harris, Secretary.

Minutes: The Minutes of the Ordinary Meeting held on 9th October, 1950, and the Minutes of the two Special Meetings held on 30th October, 1950, were signed as a correct record.

Business Arising from the Minutes:

Dental Health Exhibit—Staff arrangements for Health Week: The Secretary reported that he had engaged Miss Endicott to attend the Exhibit at the Town Hall during Health Week. Mr. Tompson, Chairman of the Dental Health Committee, stated that Miss Endicott had rendered excellent service and carried out the duties assigned to her in a most courteous and efficient manner.

Date of Annual General Meeting: The Association's Auditors, through Mr. Black, had requested that the Executive give consideration to:

- (1) Altering the date of the Annual General Meeting to some time in December, or
- (2) Closing the financial year earlier.

It was resolved that the Auditor's request be referred to the incoming Executive Committee for its early consideration.

Advertisers using Dental Health material: The Secretary informed the meeting that this had arisen out of an application by the Vincent Chemical Company which was referred to the Committee of the Honorary Officers for consideration of the principle involved.

It was resolved that, on request, information be made available to firms approved by the Executive Committee, provided the Association's name is not mentioned or publicized, except when special permission is given by Executive resolution.

Tape Recorder: In this connection the Committee of the Honorary Officers had made the following recommendations, viz.:—

"That the tape recorder should be used:

- (1) for office and administrative purposes;
- (2) for recording of meetings;
- (3) for recording of material by approved persons for dissemination amongst members of the State Branch;
- (4) for either recording or playing material to members of the Association in any part of the State by persons who in the opinion of the Honorary Officers are proficient in operating the machine."

It was resolved that the Honorary Officers' recommendations in relation to the use of the Tape Recorder be adopted with the inclusion of the additional proviso:—

- "(5) that transportation of the instrument shall be by a person responsible in all cases for its safe return to the office."

Reports from Committees:

Dental Health: The Chairman of the Dental Health Education Committee briefly outlined the various activities which had taken place during Health Week. Further, a report had been received from the Education Department, Visual Education Section, that there had been a very heavy demand for all five copies of the film "Talking of Teeth."

In regard to the activities during the coming year, the following projects were proposed:—

- (1) The issue of Diet Sheets to members of the profession and these Diet Sheets would be preceded by some form of publicity in regard to them.
- (2) Messrs. Johnson & Johnson had approached the Committee with regard to the making of a film for distribution through the Education Department.
- (3) Messrs. Bristol Myers were prepared to make a film strip for use in the schools.
- (4) A handbook for the use of teachers in connection with the teaching of dental hygiene.

The Committee was also contemplating the recording of broadcast talks, and activities in this direction would be extended through the country Divisions. They would participate in Health Week again and essay competitions would be conducted in the schools and possibly Duntroon and also for the Royal Australian Navy and Royal Australian Air Force. Literature, including "Healthy Mouths," would be distributed.

Dental Health Exhibit: Referring to the exhibit, Mr. Tompson reported that it had attracted a great deal of attention during Health Week and it was estimated that about 142,000 people had passed through the Town Hall. The exhibit would now have to be placed in storage. To prevent it deteriorating whilst in storage and also to protect it from damage on those occasions when it had to be transported, the Dental Health Committee requested that authority be given to have a proper case made. Such a case, strongly made and suitable for transporting the exhibit by rail and even overseas by ship, would involve an expenditure of approximately £25.

It was resolved that the Dental Health Education Committee be given authority to expend the sum of £25 for the purpose of having a suitable case made for the Dental Health Exhibit.

Broadcasting project: In connection with the proposed broadcasting project to be carried out during the coming year, Mr. Tompson said his Committee considered it would be a good idea to consult a public relations officer. It was requested that authority be given for such a consultation, the fee for which would probably be about three guineas.

It was resolved that authority be given to the Dental Health Education Department to hold a consultation with a public relations officer to discuss their projects for the coming year, provided the consultation fee was within the amount suggested.

It was resolved that the report of the Chairman of the Dental Health Education Committee be adopted *in toto*.

Divisions: Mr. Krauss reported that all Divisions were working smoothly. He and the President had attended the Blue Mountains Division's Annual General Meeting held on the 11th November, 1950. He had suggested that they limit their meetings in future to three a year and promised that they would be given every help possible for these three meetings.

By-laws re Divisions: Dr. Rowell here raised the question of Divisional Office-bearers. Reference had been made to Divisional Presidents and Vice-Presidents. This was actually a contravention of the By-laws of the State Branch which laid down that Divisional Committees should have only a Chairman, an Honorary Secretary and an Honorary Treasurer. He felt that, with the Divisions approaching their Annual Meetings, they should be apprised of their position in relation to this Executive and in regard to their Honorary Officers.

It was resolved that the attention of the Secretaries of all Divisions be referred by letter to the By-laws and specifically to the By-law concerning the nomenclature of officers of the Divisional Committees.

Visits to Divisions: Approval was sought for Dr. Bastian having visited Newcastle on 27th October, 1950, as desired by Mr. Krauss and also for him to visit Kempsey on 25th and 26th November, and for Dr. Taylor and Dr. McMullin to go to Orange on 2nd December.

It was resolved that approval for these visits be given.

Library: The Secretary reported that a meeting of the Library Committee had been held on Tuesday, 10th October, 1950, and that certain books had been obtained for the sum of £17/4/9, being out of the allocation set aside for the purchase of library books.

It was resolved that this report be received.

Membership:

New members: It was resolved that the following dental practitioners, whose applications were in order, be admitted to membership of this State Branch as from 13th November, 1950:—

Gouvernet, Paul Jules, B.D.S.; Massie, John Raymond, B.D.S.; Patch, Barry Mitchell, B.D.S.; Ratcliffe, Henry Stephen, B.D.S.

Resignations: It was resolved that the resignations of Mr. W. P. Riordan, B.D.Sc. (Melb.), L.D.S. (Vic.); Mr. G. Molyneux, B.D.S., and Dr. L. M. Clark be accepted as from 31st December, 1950.

It was resolved that a letter be sent to Mr. Riordan expressing regret that he is leaving the Southern Division.

Deceased: The Secretary reported that Mr. E. W. Usher, of Vaulcuse, had died on 29th June, 1949, and his death had not been recorded in the Minutes.

It was resolved that Mr. Usher's name be deleted from the Register of Members.

Repatriation Dental Treatment:

The Secretary read a letter dated 1st November, 1950, which he had received from the Honorary Secretary of the Federal Office and stated that he had taken the necessary steps to obtain the information required. This letter, together with the Secretary's report thereon, was received.

Affiliation with British Dental Association:

The Secretary read a letter which he had received from the Honorary Secretary of the Federal Office. It was resolved that this letter be received and the information circulated by publication in the Dental Journal.

Correspondence:

Research Scholarship—Mr. B. Lilienthal: The Secretary read a letter which had been received from the Registrar of the University of Sydney, dated 30th October, 1950, with reference to the Walter and Eliza Hall and Australian Dental Association Dental Research Scholarship and stating that the Trustees had approved Mr. Lilienthal's application for an extension of the scholarship for one year at a salary of £600 per annum and that they had, further, approved the suggestion that the scholarship should lapse in 1952 and 1953. This was received.

General Business:

Honorary Membership for 1951: A list of the present Honorary Members having been circulated to the Committee, it was resolved:—

(1) That the following be recommended to the General Meeting for re-appointment as Honorary Members in 1951:—

The President, Australian Dental Association; the President, British Dental Association; the President, American Dental Association; the President, New Zealand Dental Association; the President, British Medical Association (New South Wales Branch); Professor Harvey Sutton; Mrs. John Barr, B.D.S.; Dr. P. C. Charlton; Professor A. J. Arnott; Dr. N. E. Goldsworthy; Dr. E. C. Gates.

(2) That Mr. W. P. Riordan and Mr. O. J. McDermott be recommended to the General Meeting for appointment as Honorary Members for 1951.

(3) That the name of Professor R. Harris be recommended to the General Meeting for appointment as an Honorary Member for 1951.

Appointment books: Mr. Reynolds stated that the Supply Houses in Newcastle were discontinuing their practice of supplying appointment books. He suggested that, in the circumstances, the Australian Dental Association (New South Wales Branch) make appointment books available for purchase by members.

It was resolved that this suggestion be submitted to the Benevolent and Provident Fund Committee for consideration.

Shortage of dental materials: Mr. Krauss raised the question of shortage of dental materials which had to come from dollar countries and stated that he had referred to this matter during a personal discussion with a Federal Parliamentarian who had asked why the Association did not approach the authorities in this matter. He had said that, if they did so, he would take it up and felt sure that there would be no difficulty in securing the importation of the materials required. The Secretary reported that this matter was being dealt with on a Federal level and the Honorary Officers of the Federal Office were at the present stage in process of securing a list of such materials from the panel of co-operating practitioners attached to the Standards Committee, and that, as soon as full information was available, representation would immediately be made to the suitable authorities.

It was resolved that Mr. Krauss write a personal letter to this State Branch setting out the special materials required, and that other members experiencing the same difficulties do the same.

Dental service over Xmas and New Year period: It was resolved that the same procedure as last year be adopted.

Financial Statement: The Honorary Treasurer, Dr. R. M. Cloutier, tabled the Financial Statement for the month of October, which had been circulated to members of the Committee. It was resolved that this be received.

The meeting terminated at 10.50 p.m.

BLUE MOUNTAINS DIVISION

At the Annual Meeting of this Division held at "The Ritz," Leura, on Saturday, 4th November, 1950, the following office-bearers were elected for the year 1950-51:—

President: W. R. Buchanan (Katoomba).

Vice-Presidents: H. Weingarth (Windsor), R. Patten (St. Mary's).

Hon. Treasurer: S. L. Jackson (Katoomba).

Hon. Secretary: B. Stern (Katoomba).

Committee: G. Lauder (Penrith), J. Carroll (Lithgow), D. McEwan (Richmond).

Divisional representative: M. J. Griffin (Penrith).

New Books and Publications

Endodontia, by Bernhard Gottlieb, Seth Lee Barron and J. Hobson Crook, St. Louis, 1950. The C. V. Mosby Company. Price £3 3s. 0d. *Our copy by courtesy of W. Ramsay (Surgical) Pty. Ltd.*

It might be natural to expect a work by this author to present a stimulating appreciation of any problem and the reader will not be disappointed.

The author's conception of root canal therapy, however, does not differ markedly from that expected from a rational approach to a problem involving the repair of tissue injury.

His observations lead him to oppose the practice of apicoectomy to the extent that he favours adequate medication, root canal filling with a cement type of filling agent and, where periapical infection has occurred, surgical interference with the apical region limited to periapical curettage.

Gottlieb does not object to over-filling the root canal where periapical curettage is to be done, but where a living pulp is removed he avoids penetrating the foramen. Undue emphasis seems to be placed upon the value and use of sulphathiazole in the "sulfathiazole dentin salve" which is used to cover and protect the remnants of the apical pulp tissue.

Where an infected root canal is involved, Gottlieb has extended his tooth impregnation technique to its use in root canal therapy and follows this with an application of 10% silver nitrate solution.

The author's main contribution is in the use of certain therapeutic agents and in the emphasis with which he has demonstrated the value of encouraging growth of cementum, the aim of most serious workers in this field.—R.H.

International Dental Journal. London, 1950, Cassell and Co. Ltd.

The first number of this journal printed by Cassell and Co. Ltd., London, has come to hand. It represents the work of many years' negotiation which, in September, 1939, was to have come to fruition but for World War II.

The year 1947 marked the re-opening of the negotiations and with Professor H. H. Stones as Editor-in-Chief the first issue has arrived.

It contains seven articles especially contributed, written in English with additional legends and summaries in French, German, Italian and Spanish.

The aim of the Journal is to provide first-hand information of the most recent developments of dental science and social problems related to dentistry.

It is pleasing to note that this particular issue contains an article by Professor W. J. Tuckfield, of Melbourne. An important feature is the short history of the Federation Dentaire Internationale.

The production as a whole is outstanding and tribute must be paid to the printers and distributors. Subscriptions may be made through Cassell & Co. Ltd., 210 Queen Street, Melbourne.—R.H.

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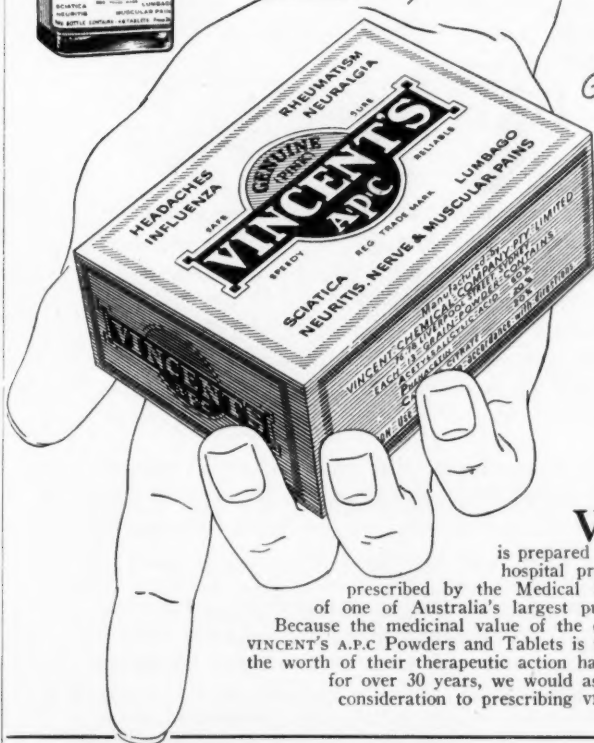
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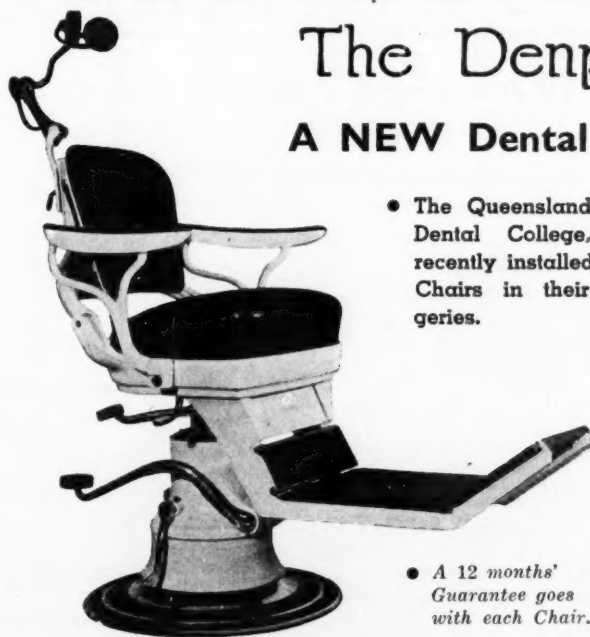
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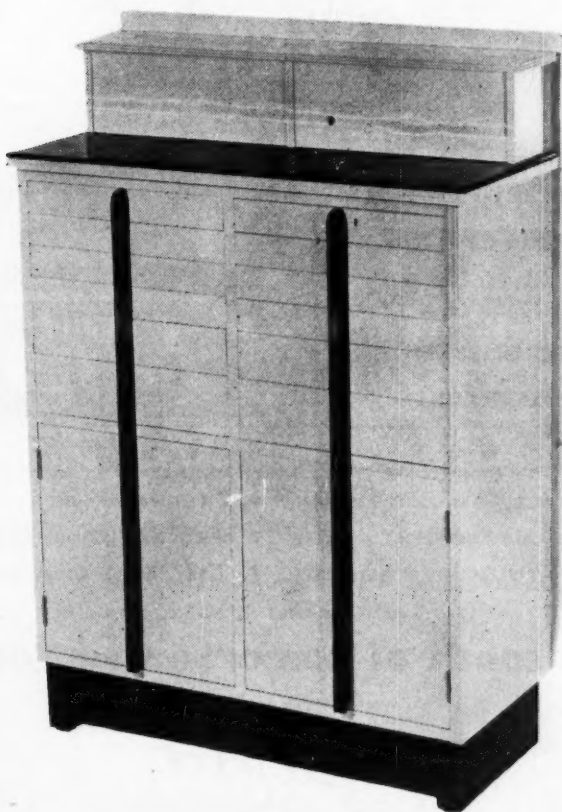
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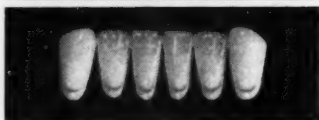
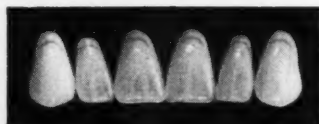
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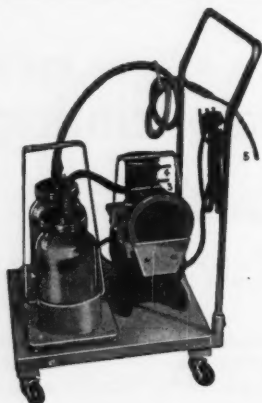
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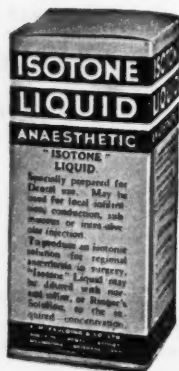
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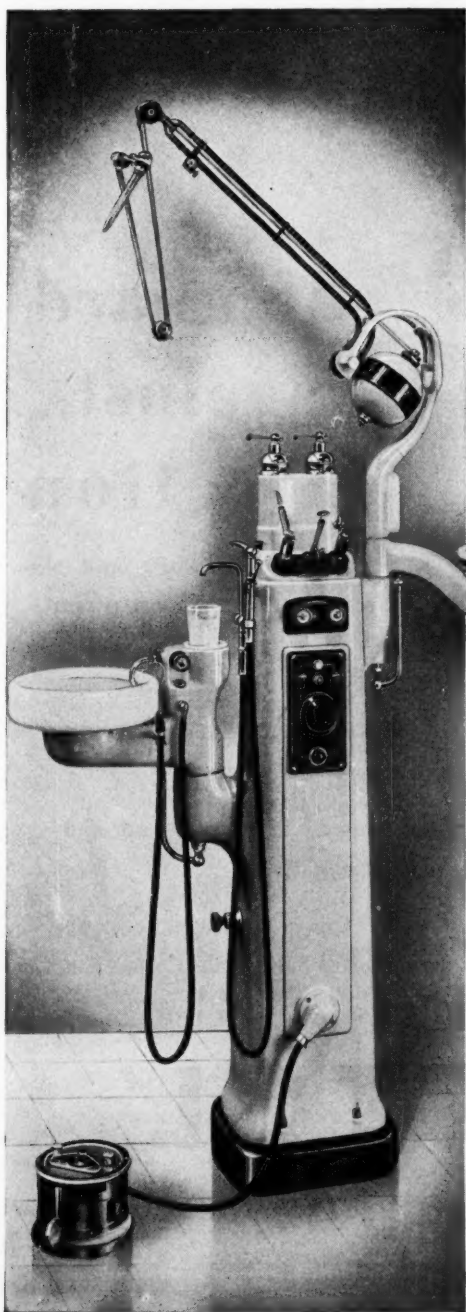


Recognised for many years by the medical and dental professions for its value in the treatment of pyorrhoea-threatened cases, Forhan's may be recommended to patients for regular daily use with every confidence.

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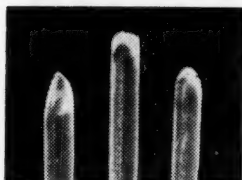
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ROUND-ENDED natural bristles
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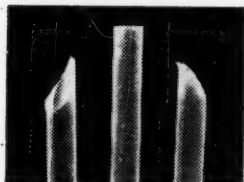


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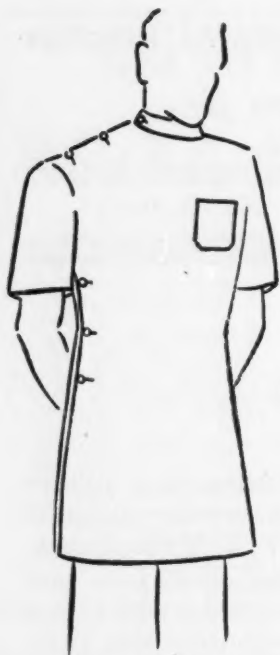
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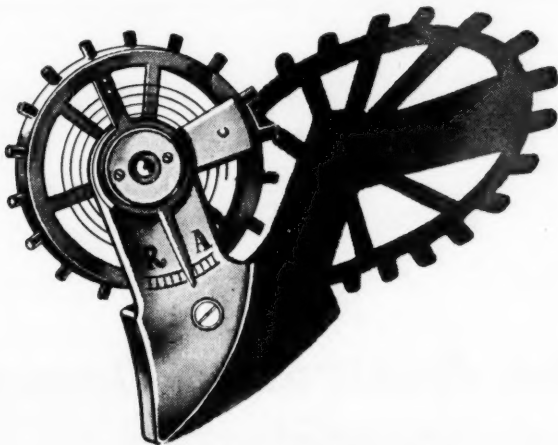
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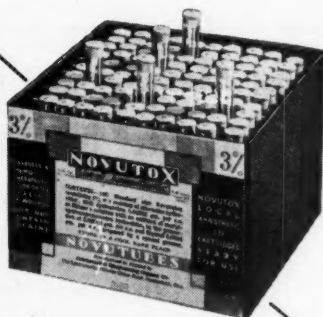
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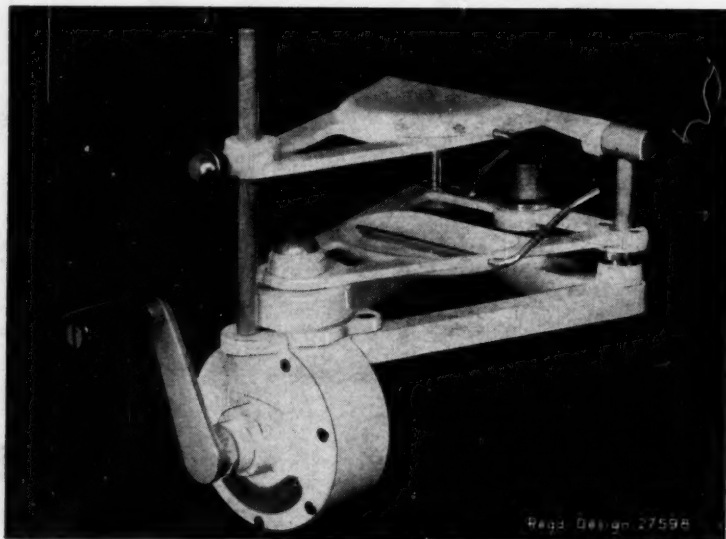
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